ATTACHMENT 4

AGENDA FOR SAUGET SITES MEETING

February 27, 1989

Sauget Village Hall

1. INTRODUCTIONS AND OPENING REMARKS

2. GENERAL DISCUSSION OF E & E REPORT

3. ILLINOIS EPA'S "LIKELY" FUTURE ACTIONS

4. POSSIBLE VILLAGE AND/OR INDUSTRIES POSTURE

5. FUTURE ACTIVITIES OF AD HOC GROUP

Attachment: Illinois EPA Fact Sheet No. 3, July 1988.

Illinois Environmental Protection Agency · P.O. Box 19276, Springfield, IL 62794-9276

SAUGET SITES/DEAD CREEK

FACT SHEET #3
JULY, 1988

In June, 1988, the Illinois Environmental Protection Agency (IEPA) released the Expanded Site Investigation Final Report, a $1.3 million, 1000 page technical study that identifies hazardous waste problems in the Sauget-Cahokia area. The study began in late 1985 as part of "Clean Illinois", the state program modeled after the Federal Superfund hazardous waste site program. The original study, the Dead Creek Remedial Investigation/Feasibility Study (RI/FS), was designed to locate and analyze buried hazardous wastes, identify potential impacts of the wastes and explore possible solutions.

Early in the project, IEPA and its consultant realized that the potential site solutions would probably cost more than the entire Clean Illinois budget, therefore, Federal funding would be needed. The RI/FS was redirected to an expanded Site Investigation (SI) in August, 1986 to determine the area's "Hazard Ranking System (HRS)" score and eligiblity for proposal to the Federal Superfund program.

Contamination Sampling in the Area

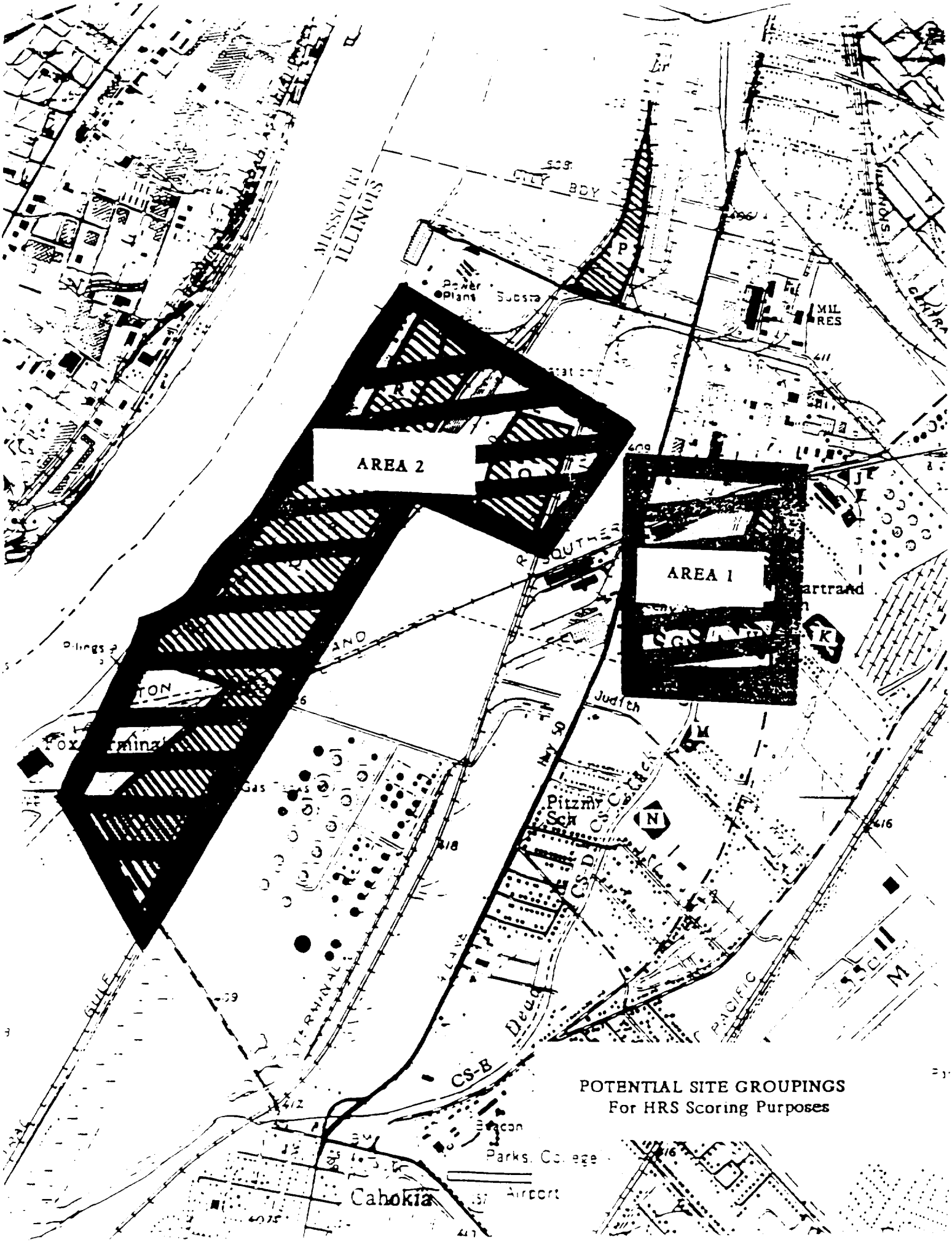
Local residents have known about area hazardous waste dumping locations and practices for many years and have provided valuable assistance and information to IEPA. In order to prove a project's eligibility for Federal funding, evidence of chemical contamination has to be established using Federal quality controls, methods and documentation. The sampling program for this project included:

* magnetometry and electromagnetic conductivity surveys to identify exact locations of buried materials (such as old steel drums), identify contamination movement below the ground's surface and assist in choosing locations for further testing,

* soil gas surveys to assist in identifying the boundaries of some of the sites, movement routes of contamination and best locations to place groundwater monitoring wells and soil test borings,

* surface water and sediment samples to determine contamination levels of Dead Creek from its beginning in Sauget, south into Cahokia,

* surface and subsurface soil sampling to characterize wastes,



POTENTIAL SITE GROUPINGS
For HRS Scoring Purposes

* hydrogeologic investigation to provide preliminary data to evaluate groundwater quality, determine direction and level of groundwater and measure speed that water moves downward through the soil,

* air sampling to indicate whether sites contribute to air pollution.

Findings of the Study

The report draws upon all the sampling that was done, historical aerial photographs, previous reports, information provided by citizens and health effects studies to obtain extensive information about the hazardous wastes in the Sauget/Cahokia area. Pages 7-1 through 7-55 in the report provide a summary of the conclusions and a few of those are highlighted here.

Surface soils samples from Site G (refer to map) show very high levels of organic chemicals, polychlorinated biphenyls (PCBs) and metals. Examples include pentachlorophenol (21,000 parts per million), Aroclor 1254 (29,000 ppm), cyanide (22 ppm) and mercury (23 ppm). Because of the extremely high levels of contaminants, special quality control methods had to be utilized to analyze the samples accurately. The site was fenced to prevent public access.

Subsurface soils at all Area 1 and Area 2 sites contain significant concentrations of a variety of organic chemicals, such as naphthalene (5,400 ppm) and Arochlor 1260 (4,400 ppm). Contamination was found at depths to a sampling maximum of 50 feet below the surface of the ground. Laboratory results indicated that chemical wastes with identical "fingerprints" (a method of identification) have been found at many different sites suggesting a possible common source for those buried wastes.

Groundwater samples show organic chemical contamination at every location, including phenol (60 ppm) at Site R, phenol (190 ppm) and pentachlorophenol (35 ppm) at Site Q, chlorobenzene (180 ppm) at Site O and benzoic acid (150 ppm) at Site G. Several of the groundwater contaminants are carcinogenic, others are acutely (short-term exposure) or chronically (long-term exposure) toxic. Groundwater sampling was limited to a relatively shallow portion of the aquifer.

It was also determined that contaminants are moving through the groundwater toward the Mississippi River at a faster rate than previously predicted.

Contamination of the Dead Creek surface water and sediment was found primarily in the creek sectors labeled CS-A and CS-B, all north of Judith Lane. Because the culverts are blocked at Queeny Avenue and Judith Lane, CS-A and CS-B are like surface impoundments, holding contaminants and run-off in place. Creek Sector B sediments contained a variety of organic chemicals, such as 1,4-dichlorobenzene (220 ppm), and metals, such as barium (17,300 ppm) .

Effects of Contamination

The information obtained by collecting and analyzing samples (as previously described) is essential in the next step toward establishing Superfund eligibility; the identification of "migration, fate and impact" of the contamination. In other words, "where are the contaminants going and what happens when they get there?" The purpose is primarily to predict possible effects on the environment and the public rather than to provide an in-depth health study. The information will also be useful to the Illinois Department of Public Health (IDPH) as a base from which to begin a future public health assessment.

Although high levels of many hazardous wastes were found in the project area, that does not necessarily mean that human health has been or will be affected. For health to be affected, citizens must be exposed to the contaminants and the exposure, in most cases, must be repeated over a period of many years. Examples of exposure methods include skin contact with the chemicals in soil or water, drinking contaminated groundwater from wells, eating contaminated fish and inhaling chemicals through the air. Most of the areas of soil and water contamination are underground or fenced, city water is available to area residents and most areas where inhalation might be possible are isolated from the general public. The river and its fish are likely sources of exposure to the contaminants but further study is needed to be certain of effects on downstream water supplies and fishing.

The Next Steps of the Process

The process is certainly not a speedy one. Many citizens remember Governor Thompson's assurance in 1984 that Dead Creek would be cleaned up in a year. Since that summer, IEPA has discovered the full extent of the area's contamination including many previously unknown sites and hazards, the ineffectiveness of addressing only the creek instead of the whole area and the inability of the state to afford an appropriate type of remedy for the sites. Work on the study was delayed because IEPA had to obtain legal access to all the sites from the property owners before samples could be taken. Another slowdown that the Agency is facing is the U.S.EPA's revision of the scoring method, as required by the 1986 Congressional reauthorization of Superfund. No new sites can be submitted to the Federal Superfund until the new method has been proposed, made available for public comment, revised and accepted. It is predicted that all those steps will take until Spring, 1989.

Now that the Expanded Site Investigation is complete, IEPA must complete the "scoring package" which consists of a mathematical formula that incorporates the findings of the study. The various sites might be divided into two large areas (one east and one west of Illinois Route 3) and scored. The scoring packages must then be submitted to U.S.EPA for review and consideration.

SUMMARY OF THE ACCESSIBILITY OF SITES TO
THE GENERAL PUBLIC AND WORKERS

gnation	Access to General Public		Access to Workers		
	Restricted	Accessible	Not Applicable	Restricted†	Accessible
;	X*		X		
H		X	X		
I	X				X
J		X**			X
K		X	X		
L		X			X
M	X		X		
N	X			X	
O		X	X		
P		X			X
Q	X***				X
R	X			X	

Access to Site G restricted due to the construction of a fence as a response action by
'A.

Site J is fenced, but has no other mechanism for restriction (open gates).

Pedestrian access to the south end of site Q is possible.

Worker access is limited to employees having keys to or conducting work at the property.

:ce: Ecology and Environment, Inc. 1988.

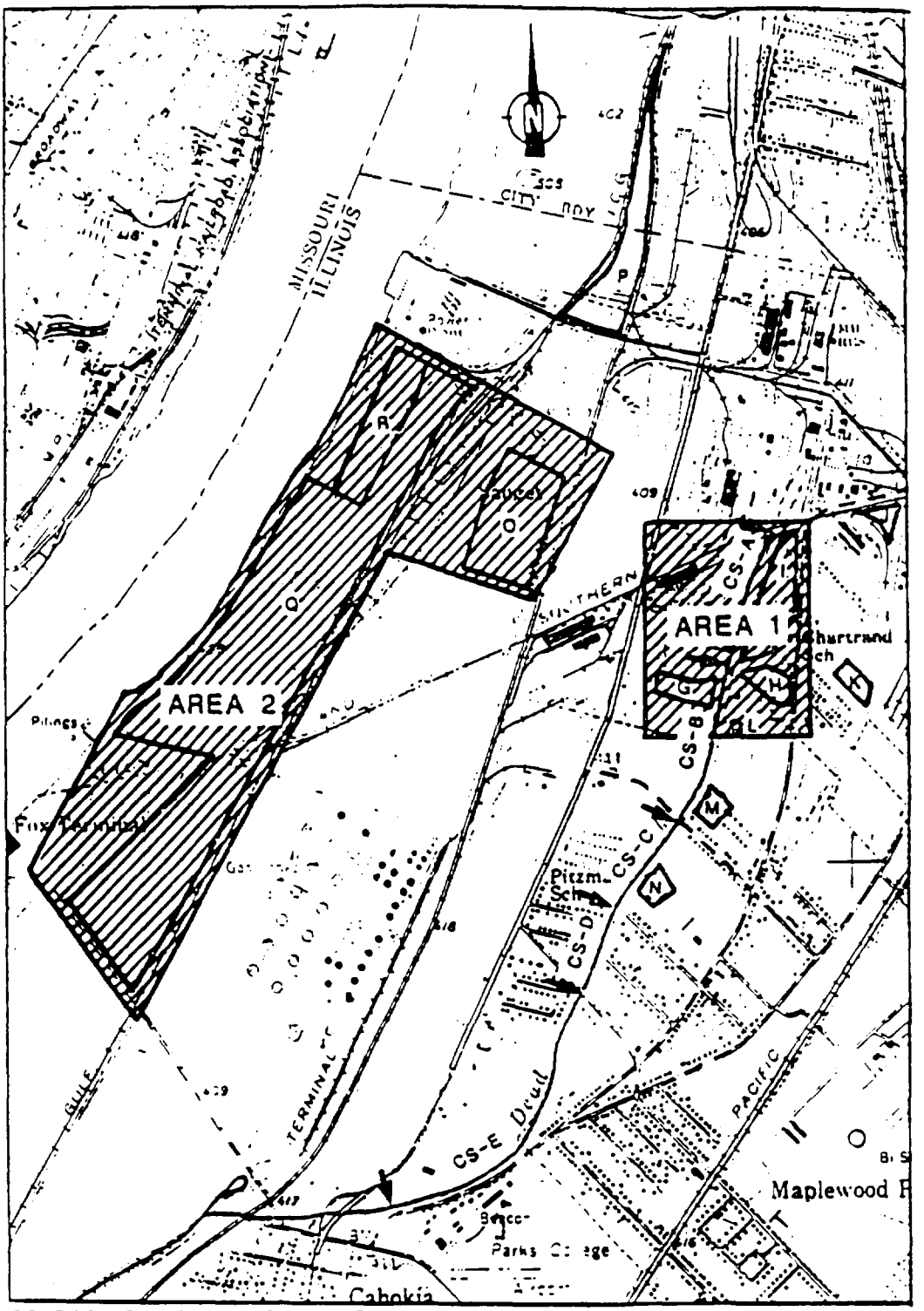


FIGURE 2-3 SITE GROUPINGS FOR THE DCP UNDER THE REVISED SCOPE OF WORK

Table 2-1

PROPERTY OWNERS/OPERATORS DURING PERIOD OF DISPOSAL OPERATIONS

Site Desig.	Approx. Years of Operation*	Owner(s) at Time of Operation	Present Owner(s)	Source**
G	1950-1973	Leo and Louise Sauget-part (until 1966) Myrtle Hankins Present Cerro property-unknown	Cerro Copper Products Co. Wiese Engineering Co. Emily Hankins, Myrtle Hankins	Property search
H	1937-1957	Leo and Louise Sauget (1948)	J. D. Tolbird (Roger's Cartage Co.)	Property search
I	1937-1957	Leo and Louise Sauget (1948)	Cerro Copper Products Co.	Property search
J	1955	Sterling Steel Co.	St. Louis Steel Co. (Sterling Steel Foundry)	Property search, personal communication
K	1950-1973	Leo and Louise Sauget (1957)	Bank of Belleville (Trust property for Yvonne Sauget)	Property search
L	1971-1979	Waggoner Trucking Co. (Harold Waggoner)	Tony and Velma Lechner (Metro Construction Equipment Co.)	IEPA file, personal communication
M	1950-	H. H. Hall Construction Co.	Thomas Owen	Property search

Table 2-1 (Cont.)

Site Desig.	Approx. Years of Operation*	Owner(s) at Time of Operation	Present Owner(s)	Source**
M	1950-1962	H.H. Hall Construction Co.	H. H. Hall Construction Co.	Property search, personal communication
O	1967-1978	Village of Sauget	Village of Sauget	IEPA file, property search
P	1972-1984	Illinois Central Gulf R.R. (until 1979) Paul Sauget Union Electric Co.	Bank of Belleville for (Trust property for Paul Sauget) Union Electric Co.	IEPA file
Q	1962-1975	Cahokia Trust-Paul Sauget	Riverport Terminal & Fleeting Co. (leased to Pillsbury Co.)	IEPA file
R	1957-1974	Monsanto Chemical Co.	Monsanto Chemical Co.	IEPA file

* Where available, years of operation are based on file material.
If file information was not available, years were based on review of historical aerial photos.

** Property search was conducted at the St.Clair County Tax Assessor's office in Belleville.
Other sources include: IEPA file material with specific reference to property ownership (correspondence, permit applications, enforcement documents), or personal communication with present site owners or operators.

Source: Ecology and Environment, Inc. 1988.

Table 2-2

PARTIAL LIST OF WASTE TYPES IDENTIFIED
AT THE DCP SITES

Chemical	Sites Where Chemicals Were Identified
aliphatic hydrocarbons	G, Q, R, CS-A, CS-B
chloroanilines	G, I, Q, R
chlorobenzenes	G, I, O, Q, R, CS-A, CS-B
chloronitrobenzenes	Q, R, CS-B
chlorophenols	G, I, L, O, Q, R, CS-B
dioxins/dibenzofurans	O, Q, R, CS-B
naphthalenes	Q, R, CS-B
PCBs	G, M, O, Q, R, CS-A, CS-B, CS-C
phenanthrene	G, O, Q
phenol	I, L, O, Q, R, CS-B
pyrene	G, O, Q

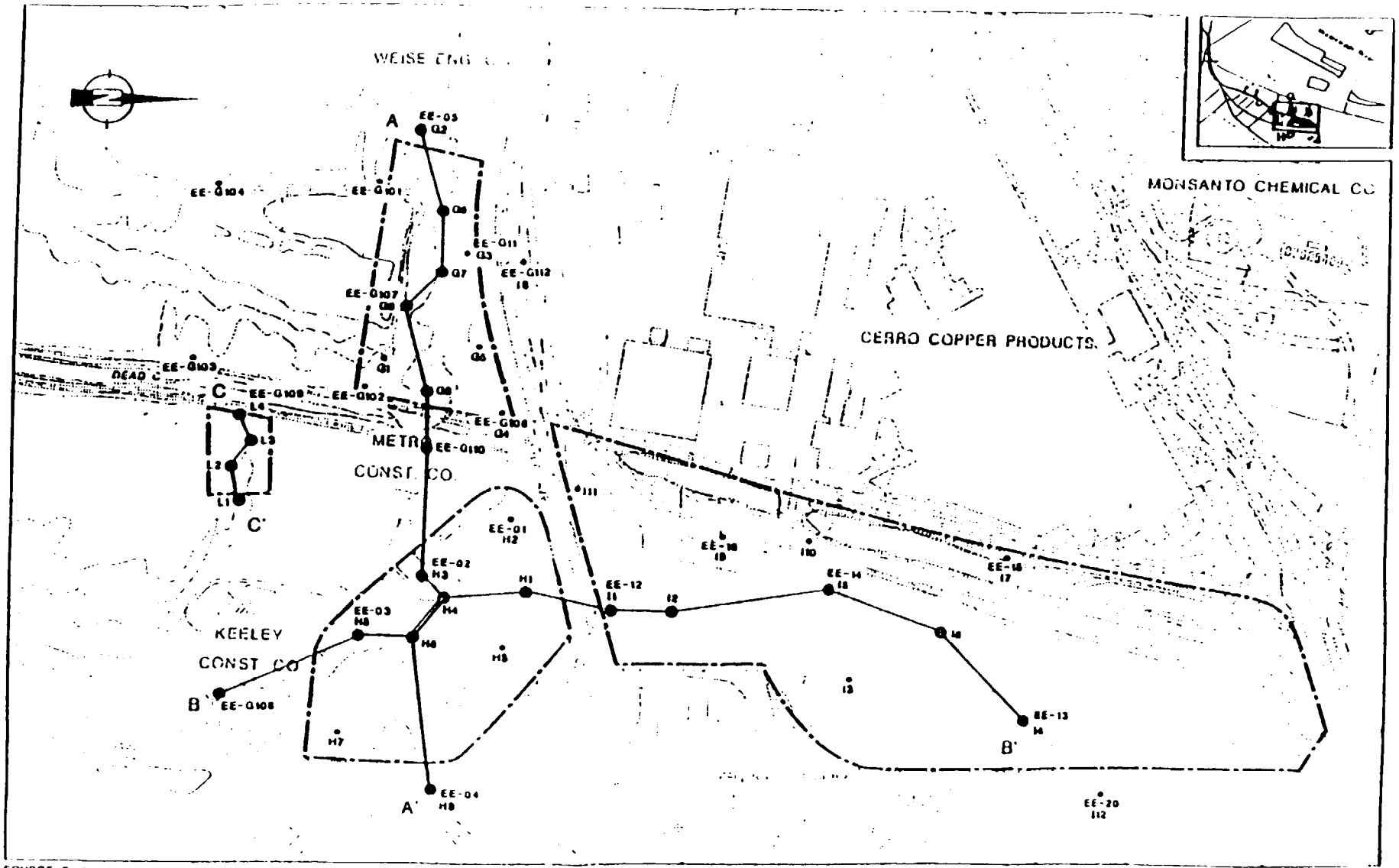
* No previous information at data was available for the following sites: H, J, K, and M.

Source: Ecology and Environment, Inc. 1988.

Sauget Sites Committee

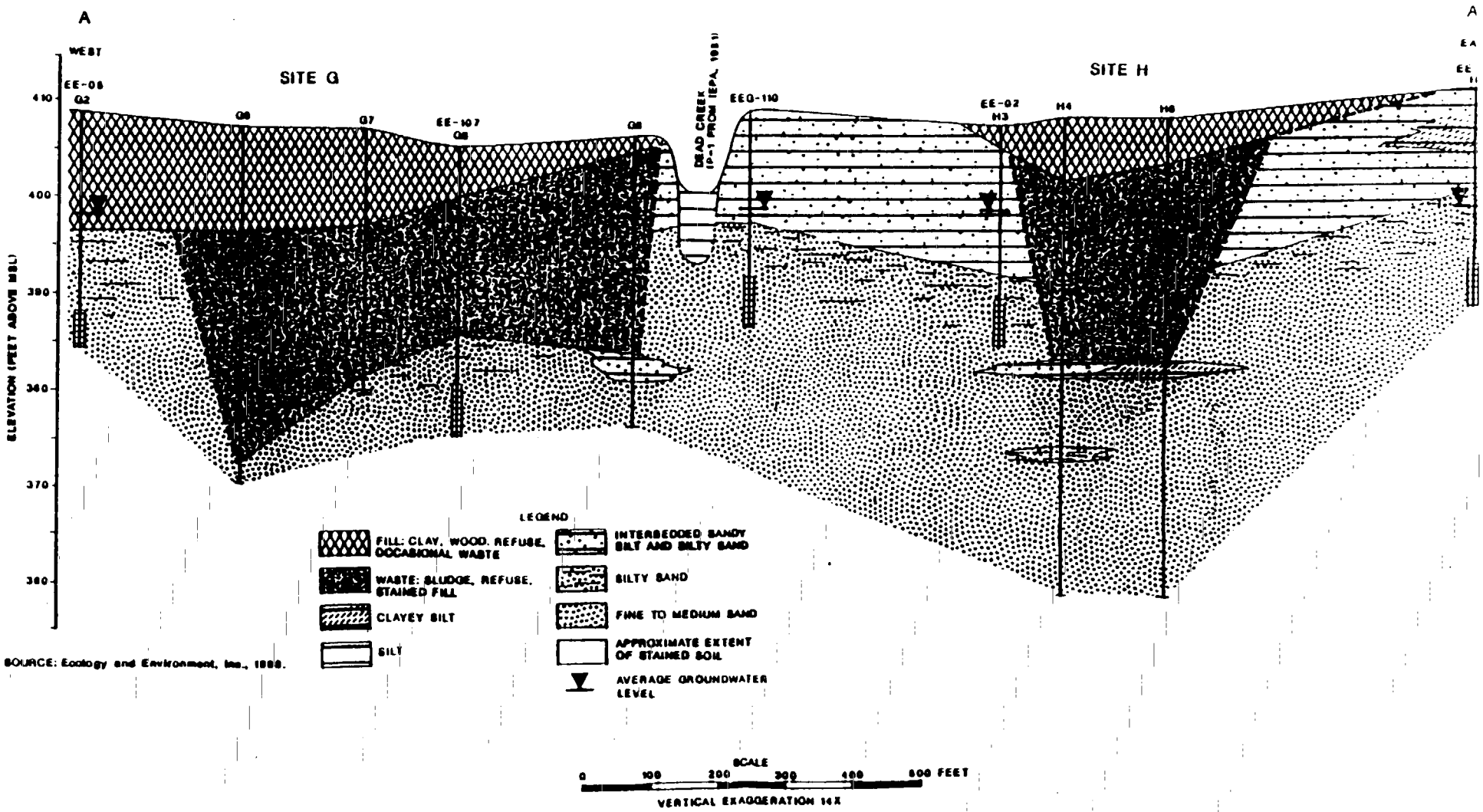
February 27, 1989
1:00 P.M.

1.	Pam Thomson	Cerro Copper
2.	Dave Adams	Ethyl
3.	Larry Keeley	Keeley Const
4.	S.A. Silverstein	Cerro Copper
5.	Nick Gladding	Bryon, Cave
6.	Dennis Warchol	Trade Waste Inc.
7.	Allyn Konrad	Roggrs Cartage Co
8.	David R. Kimbrien	Rogers Cartage Co
9.	James L Mintcuk	Cerro Copper
10.	Mark Brekhus	Kerr McGee
11.	Mike Bonaventure	GHYC
12.	Ray Ehrhard	Big River Zinc
13.	Warren Small	Monsanto
14.	Max McCombs	Monsanto
15.	Bill Engman	Monsanto
16.	Keith Rhodes	Cahokia Marine
17.	Ray Avendt	Cerro Copper / Avendt Group Inc.
18.	Bill Boyle	Monsanto
19.	Henry Schmeid	cerro copper products Co
20.	Stephen Kalchma	Monsanto
21.	Rich Sauget	Sauget V. Hall
22.	Tom Siedhoff	Union Electric
23.	Susan M. Franzetti	Village of Sauget
24.	Harold G Baker Jr	Do
25.		
26.		
27.		



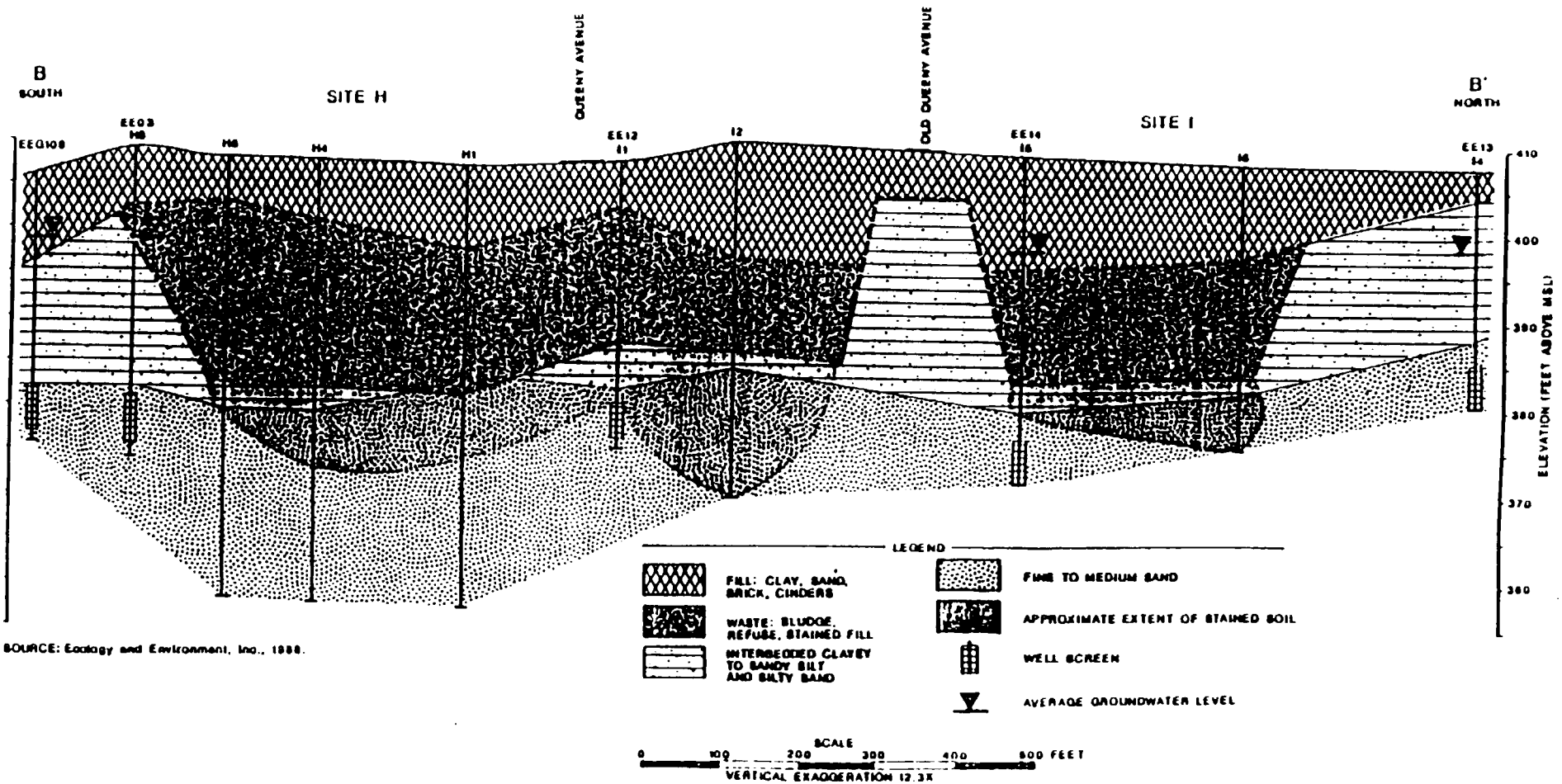
SOURCE: Ecology and Environment, Inc., 1988.

FIGURE 4-8 GEOLOGIC CROSS-SECTION LOCATIONS A-A', B-B', C-C'



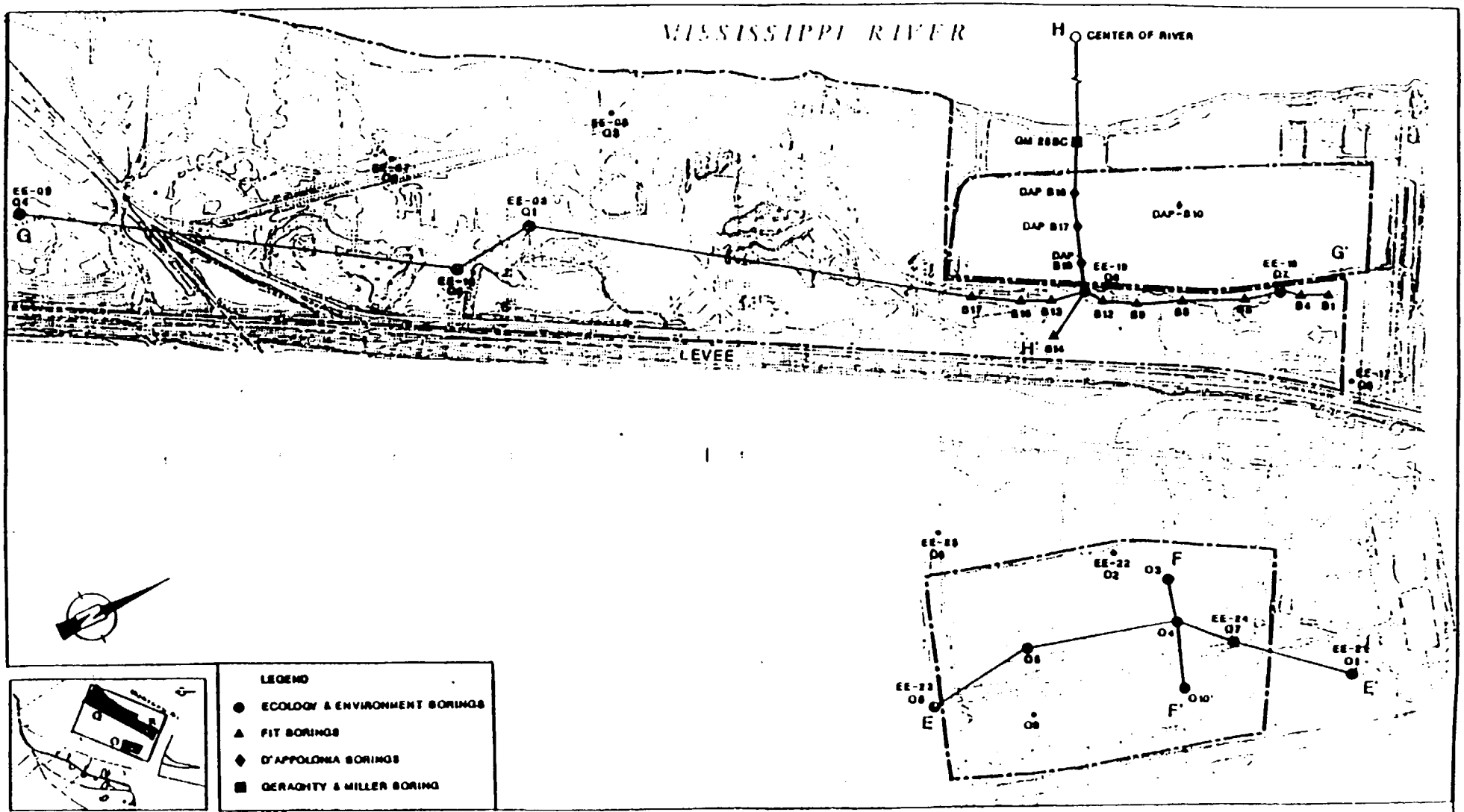
SOURCE: Ecology and Environment, Inc., 1988.

FIGURE 4-9 GENERALIZED GEOLOGIC CROSS-SECTION A-A'



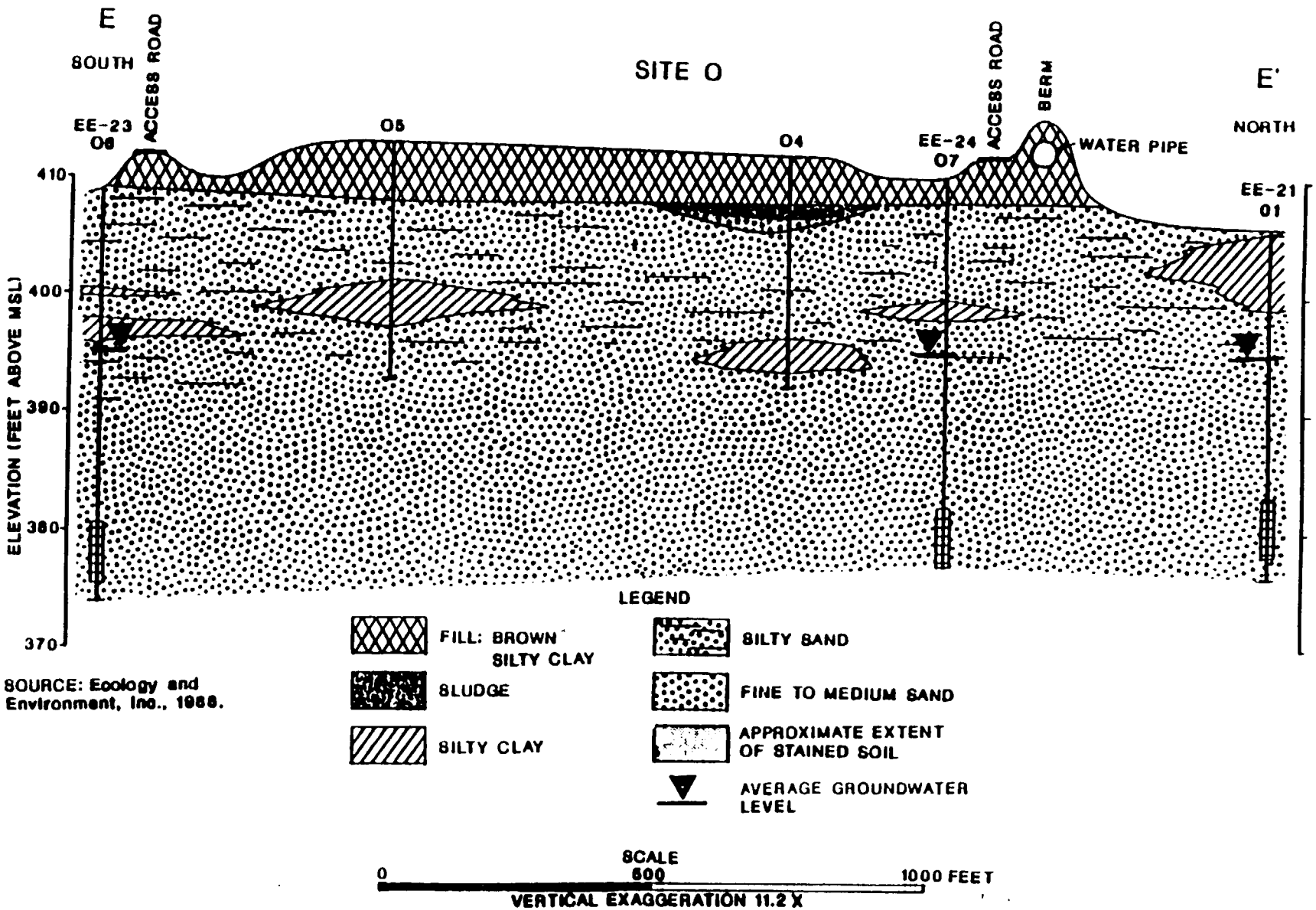
SOURCE: Ecology and Environment, Inc., 1988.

FIGURE 4 10 GENERALIZED GEOLOGIC CROSS-SECTION B-B'



SOURCE: Ecology and Environment, Inc., 1988.

FIGURE 4-13 GEOLOGIC CROSS-SECTIONS E-E', F-F', G-G' AND H-H' LOCATION MAP



SOURCE: Ecology and Environment, Inc., 1988.

FIGURE 4-18 GENERALIZED GEOLOGIC CROSS-SECTION E-E'

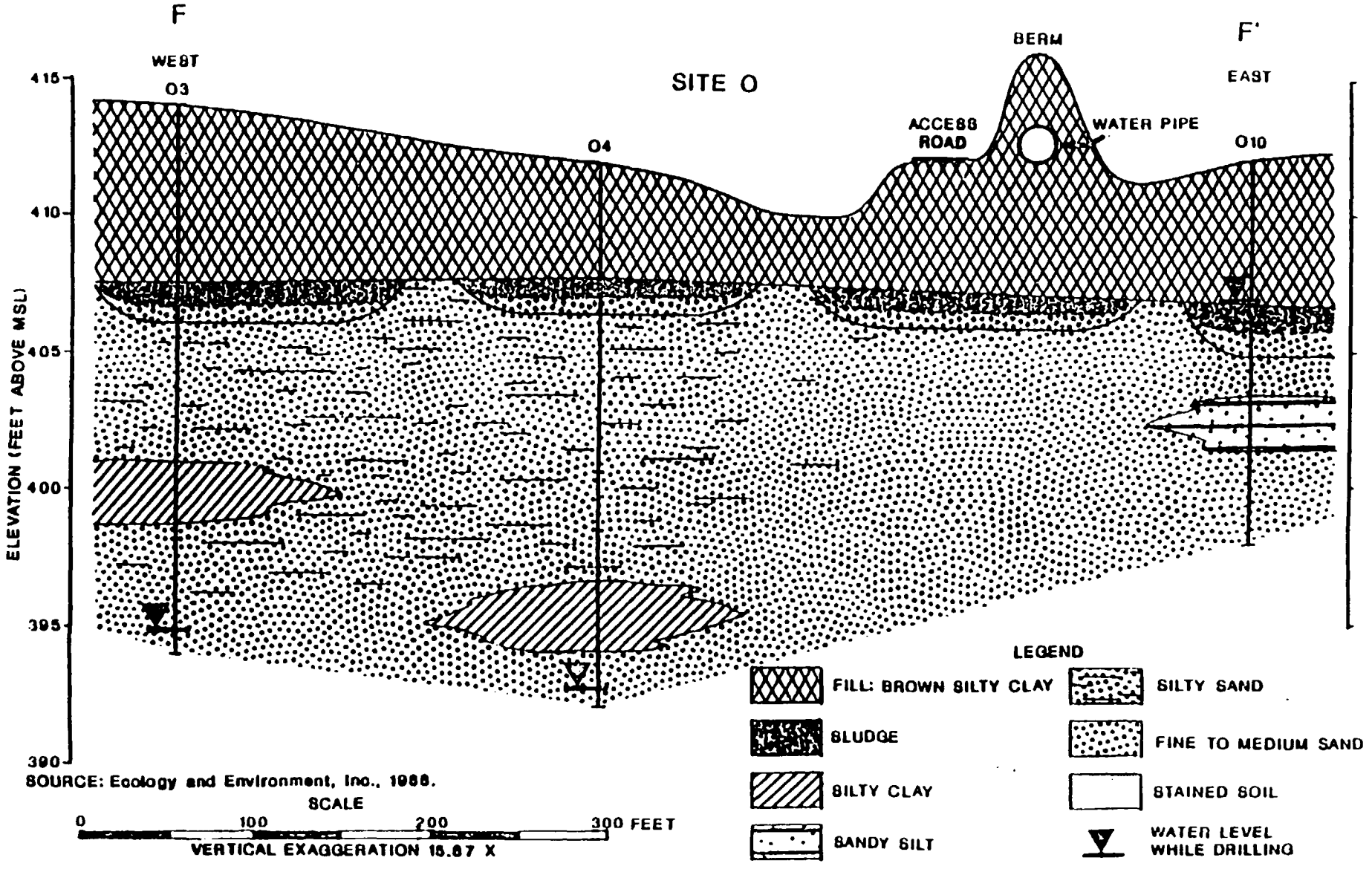
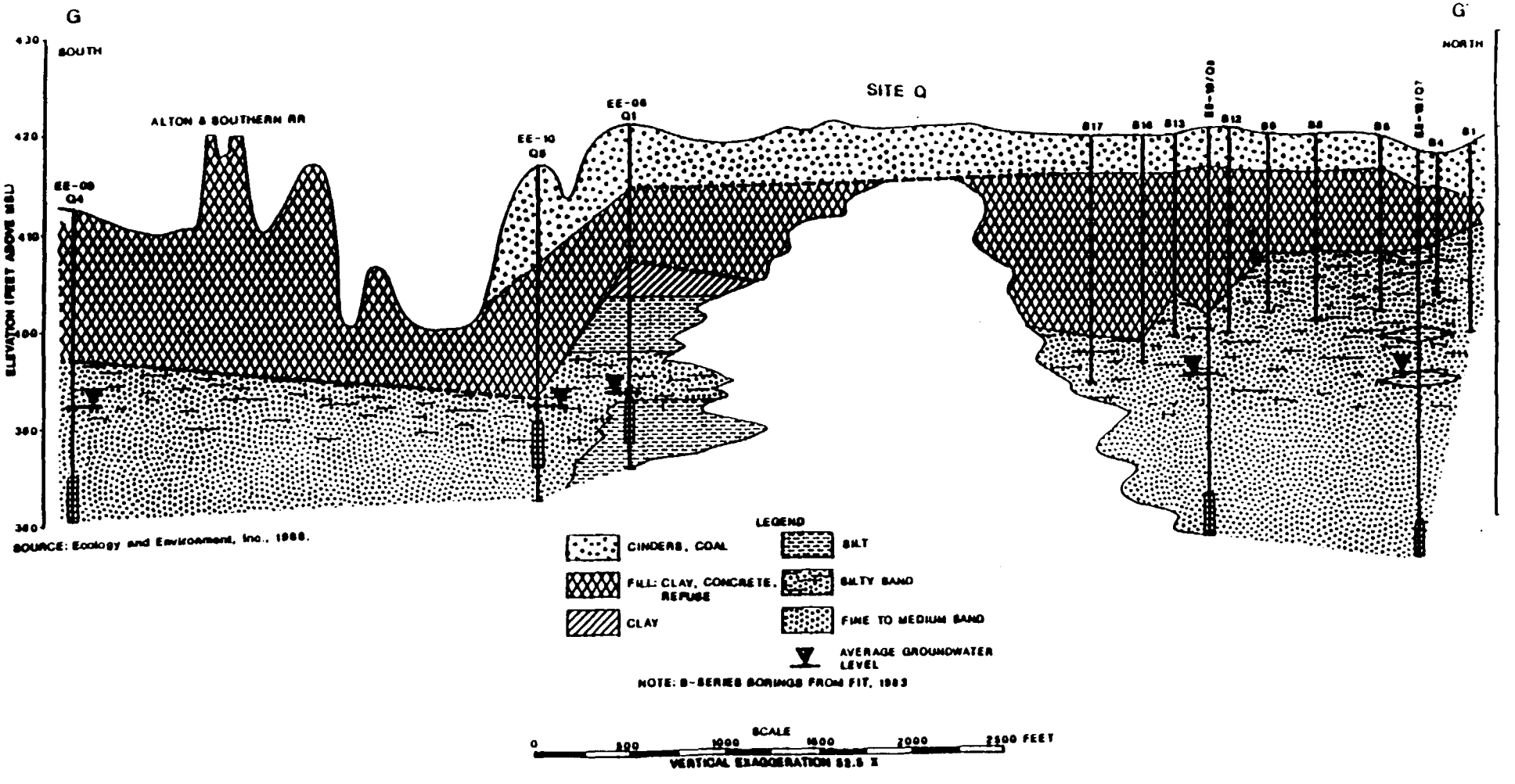
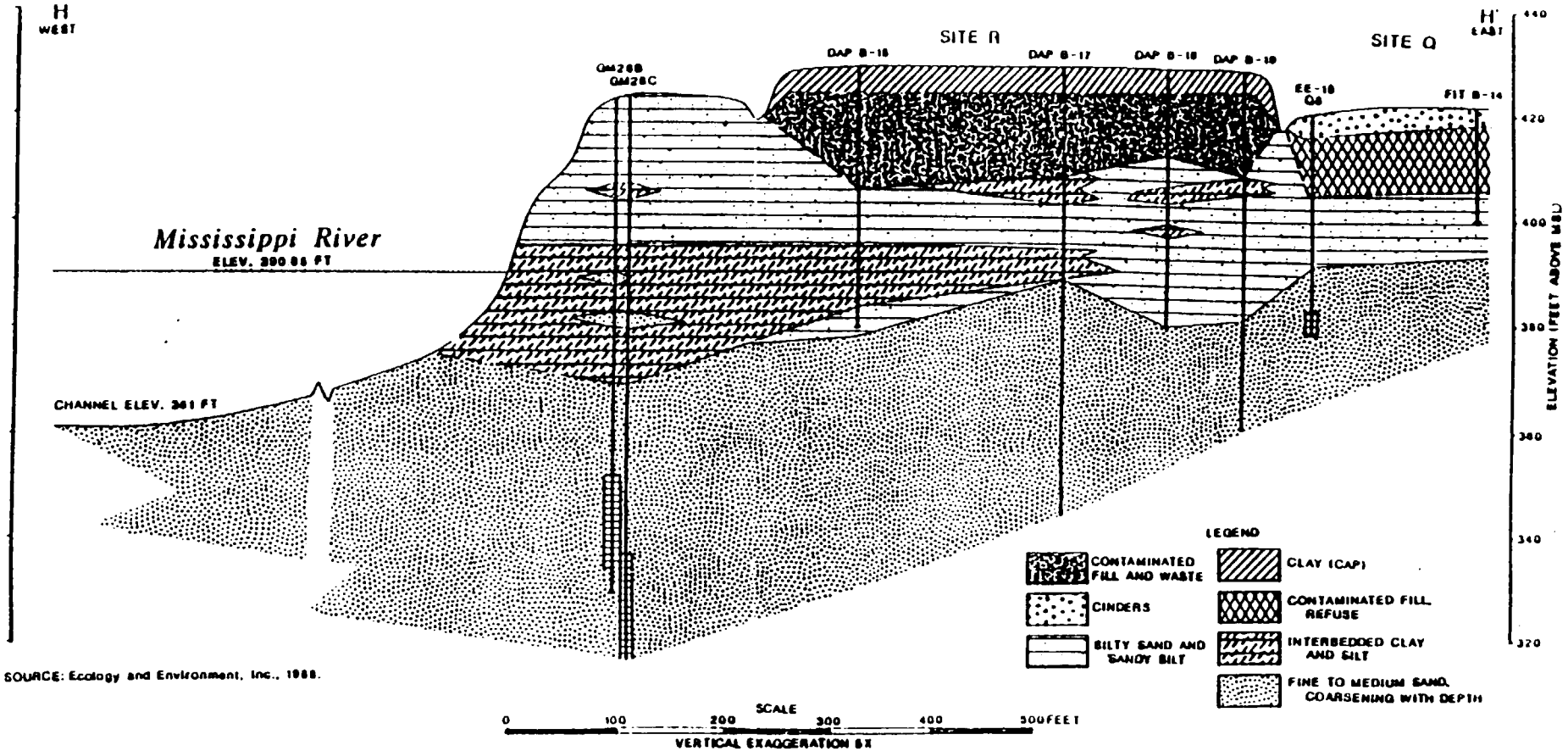


FIGURE 4-17 GENERALIZED GEOLOGIC CROSS-SECTION F-F'



SOURCE: Ecology and Environment, Inc., 1988.

FIGURE 4-18 GENERALIZED GEOLOGIC CROSS-SECTION G-G'



SOURCE: Ecology and Environment, Inc., 1988.

FIGURE 4-19 GENERALIZED GEOLOGIC CROSS-SECTION H-H'

Table 6-2

MAXIMUM CONCENTRATIONS OF SELECTED
CONTAMINANTS IN SURFICIAL SOIL (mg/kg)

Chemical Name	Site Designation G	J
Volatile Organics		
benzene	0.1	--
chlorobenzene	0.04	--
1,2-dichloroethane	--	--
trans-1,2-dichloroethene	--	--
4-methyl-2-pentanone	--	--
tetrachloroethene	0.1	--
toluene	1.4	--
1,1,1-trichloroethane	--	--
trichloroethene	0.02	--
Semivolatile Organics		
phenol	0.1	--
2-chlorophenol	--	--
2,4-dichlorophenol	6.2	--
2,4,5-trichlorophenol	--	--
2,4,6-trichlorophenol	1.5	--
pentachlorophenol	21,000	--
naphthalene	120	--
1,2-dichlorobenzene	0.1	--
1,3-dichlorobenzene	--	--

Table 6-2 (Cont.)

Chemical Name	Site Designation G	Site Designation J
1,4-dichlorobenzene	22,000	—
hexachlorobenzene	10J	—
carcinogenic polycyclic aromatics	134	—
noncarcinogenic polycyclic aromatics	154.8	—
polycyclic aromatics (total)	288.8	—
PCBs (total)	74,000	—
Total Organic Concentrations	74,034.8	2.0
Metals		
arsenic	64R	9
cadmium	46	13R
lead	18,400	34
nickel	382	377

— Not detected.

J - Estimated value - result is greater than zero, but less than the specified detection limit.

R - Spike recovery was outside control limits.

Source: Ecology and Environment, Inc. 1988.

Table 6-3

MAXIMUM CONCENTRATIONS OF SELECTED CONTAMINANTS
IN SUBSURFICIAL SOILS (mg/kg)

Chemical Name	Site Designation									
	G	H	I	J	K	L	M	P	O	Q*
Volatile Organics										
benzene	45.3	22.6	24.1	—	--	4.2	—	0.05	30.7	44
chlorobenzene	538.5E	451.6E	126.9	—	—	--	—	0.1	58.9	100
1,2-dichloroethane	0.4J	0.01	—	--	—	—	—	—	0.2	12
trans-1,2-dichloroethene	0.7J	--	0.003J	—	—	—	—	—	0.2	11
4-methyl-2-pentanone	6	7.9J	4.2	0.004J	0.01J	0.2	0.004J	0.05	7.7	250
tetrachloroethene	58.6	5.6	5.3	--	--	—	--	—	—	12
toluene	117.6	76.5	77.9	--	—	26.6	--	0.4	29.5	2,400
1,1,1-trichloroethane	—	—	1.7	--	--	--	—	—	1.4	--
trichloroethene	2J	.01J	3.8	--	—	—	—	—	0.07	55
Semivolatile Organics										
phenol	177.8	0.4J	27J	—	—	1.5J	--	3.9J	—	250
2-chlorophenol	8.8J	--	—	—	--	2.2	—	--	--	360
2,4-dichlorophenol	141.1J	741.9	—	—	—	--	—	--	—	3,100
2,4,6-trichlorophenol	49.5	612.9	--	—	—	--	—	--	—	170
pentachlorophenol	990.6	--	191.8	—	—	58.2	—	—	474.4J	100
1,2-dichlorobenzene	—	19,354E	139.7J	0.1J	—	--	—	3.6J	100	620
1,3-dichlorobenzene	—	241J	70.1	--	--	--	—	--	--	--

Table 6-3 (Cont.)

Chemical Name	Site Designation G	H	I	J	K	L	M	P	O	Q*
1,4-dichlorobenzene	3.7J	30,645E	1,837	0.2J	--	0.2J	—	8.9J	112.8	1,200
hexachlorobenzene	40.6	0.7	1,270	--	—	--	--	--	--	--
naphthalene	5,428	2,265	514.5	17.9	0.2J	0.5J	—	—	34.6J	380
carcinogenic polycyclic aromatics	22.9	1,360	—	--	3.9	0.2	—	—	550	6
noncarcinogenic polycyclic aromatics	55.6	5,384	478.4	21.1	5.5	1.7	—	--	596.2	20
polycyclic aromatics (total)	68.6	6,744	478.4	21.1	9.4	1.6	--	--	1,146	26
PCBs (total)	4,428	885.5	270	0.2	117.6C	--	--	—	1,871	16,000
Total Organic Concentration	6,795	60,655	11,749	120.5	152	138.7	0.05	35.1	4,694	29,000
Metals										
arsenic	123R	388R	14	6	9	172	6	4	8	—
cadmium	14	294	13	4	4	6	—	4	31	—
lead	3,123	4,500	23,333	10	238	106	34	526	146	—
nickel	399	15,097	2,405	72	21	2,392	11	23	136	--

* Results from 1983 site investigation.

-- Not detected.

C Identification confirmed by GC/MS.

E Estimated value--amount detected in sample exceeds the calibrated range.

J Estimated value--result is greater than zero, but less than the specified detection limit.

R Spike recovery was outside control limits.

Source: Ecology and Environment, Inc. 1988.

Table 6-4

MAXIMUM CONCENTRATIONS OF SELECTED
CONTAMINANTS IN GROUNDWATER (in ug/L)

	Drinking Water Standards or Criteria				Site Designation					
Chemical Name	MCL*	MCLG*	HA*	Reference Concentration for Carcinogens*	G	H	I	O	Q	R
Volatile Organics										
benzene	5	0	-	0.35	4,100	4,300	1,400	190,000	2,000	1,500
chlorobenzene	NS	NS	600	NA	3,100	11,000	3,100	150,000	6,700J	8,100
1,2-dichloroethane	5	0	--	0.95	480	--	120	4,000J	3,000	16,000
trans-1,2-dichloroethene	NS	70(p)	70	NA	200J	--	640	94J	4J	--
4-methyl-2-pentanone	NS	NS	NS	NA	2,200	3,600	230J	38,000	2,700	--
tetrachloroethene	NS	NS	NA	0.7	420	--	470	10,000	--	--
toluene	NS	2,000(p)	NS	NA	7,300	7,300	740	15,000	1,600J	760J
1,1,1-trichloroethane	200	200	NS	NA	--	--	--	7,800	--	--
trichloroethene	5	0	NA	2.8	800	--	270	83,000	2J	--
Semivolatile Organics										
phenol	NS	NS	NS	NA	30,000	950	1,800	500	190,000E	60,000E
2-chlorophenol	NS	NS	NS	NA	1,900	47J	370	120	33,000E	14,000E
2,4-dichlorophenol	NS	NS	105**	NA	480J	1,900	1,000	30J	14,000E	14,000E
2,4,5-trichlorophenol	NS	NS	3,500**	NA	--	580J	--	--	--	--
2,4,6-trichlorophenol	NS	NS	NA	1.7	350	1,200	290	--	6,000	2,100
pentachlorophenol	NS	200(p)	220	NA	6,300	650	2,400	23J	35,000E	--
1,2-dichlorobenzene	NS	620(p)	620	NA	200J	560	220J	7,800	2,000	340

Table 6-4 (Cont.)

Chemical Name	Drinking Water Standards or Criteria				Site Designation					
	MCL*	MCLG*	HA*	Reference Concentration for Carcinogens*	G	H	I	O	Q	R
1,3-dichlorobenzene	NS	NS	NS	NA	4J	120	110	320	--	--
1,4-dichlorobenzene	75	75	75	NA	570	2,600	910	10,000E	250	550
hexachlorobenzene	NS	NS	NS	NA	6J	--	--	--	--	--
naphthalene	NS	NS	NS	NA	21,000E	250	230	160	70	82J
1,2,4-trichlorobenzene	NS	NS	4.2**	NA	1,900	720	2,700	270	390	--
carcinogenic polycyclic aromatics	NS	NS	NA	$3x10^{-2}$***,†	38	--	--	--	--	--
noncarcinogenic polycyclic aromatics	NS	NS	NS	NA	--	15J	25J	--	--	--
total polycyclic aromatics	NS	NS	NS	NA	38	15J	25J	--	--	--
PCBs (total)	NS	0(p)	NS	$8.1x10^{-3}$***	890	52	--	--	--	--
Total Organic Concentrations	NA	NA	NA	NA	256,850	44,573	27,977	588,657	326,420	129,531
Metals										
arsenic	50	50(p)	50	NA	175	8,490	20	133	100	48
cadmium	10	5(p)	5	NA	22R	70	--	8	--	--
lead	50	20(p)	20	NA	--	28R	--	--	--	--
nickel	NS	NS	150	NA	349	17,200	95	--	112	[18]

NS No standard or criterion.

NA Not applicable.

-- Not detected.

(p) Proposed.

Table 6-4 (Cont.)

* Unless otherwise footnoted standards and criteria were extracted from EPA (1986).
** Calculated based upon reference dose (see text).
*** Calculated based upon EPA estimated carcinogenicity potency factor (see text).

† Based on benzo(a)pyrene EPA estimated carcinogenic potency.

E Estimated value - amount detected in sample exceeds the calibrated range.
J Estimated value - result is greater than zero, but less than the specified detection limit.
R Spike recovery was outside control limits.
[ ] Value is greater than or equal to the instrument detection limit, but less than contact required detection limit.

Source: Ecology and Environment, Inc. 1988.

Table 6-5

MAXIMUM CONCENTRATION OF SELECTED
CONTAMINANTS IN DEAD CREEK SEDIMENTS
(in mg/kg)

Chemical Name	Site Designation						
	Creek Sector A	Creek Sector B	Creek Sector C	Creek Sector D	Creek Sector E*	Creek Sector F*	Site M
Volatile Organics							
benzene	—	0.1J	--	—	--	—	--
chlorobenzene	0.5J	5.2	--	—	--	—	--
1,2-dichloroethane	--	--	—	--	--	—	--
trans-1,2-dichloroethene	—	—	--	—	--	—	--
4-methyl-2-pentanone	—	0.2J	--	--	--	—	--
tetrachloroethene	--	—	—	—	—	--	--
toluene	--	0.8	--	—	--	—	--
1,1,1-trichloroethane	--	—	--	—	--	--	--
trichloroethene	—	--	--	--	—	--	--
Semivolatile Organics							
phenol	—	—	0.6J	—	--	--	—
2-chlorophenol	--	--	--	—	--	--	--
2,4-dichlorophenol	--	--	—	--	—	--	--
2,4,5-trichlorophenol	--	--	--	—	--	—	--
pentachlorophenol	0.8J	0.9J	—	--	—	—	--
1,2-dichlorobenzene	0.5	17J	—	--	--	—	—
1,3-dichlorobenzene	0.6J	--	0.1J	--	--	—	--
1,4-dichlorobenzene	0.3	220	0.7J	--	--	--	--

Table 6-5 (Cont.)

Chemical Name	Site Designation: Creek Sector A	Creek Sector B	Creek Sector C	Creek Sector D	Creek Sector E*	Creek Sector F*	Site M
hexachlorobenzene	1.1J	1.9	—	—	--	—	—
naphthalene	0.1J	9.5J	0.3J	—	—	—	—
carcinogenic polycyclic aromatics	3.7	5.2	28	1.4	—	—	—
noncarcinogenic polycyclic aromatics	2.4	42.9	13.1	0.3	—	—	—
polycyclic aromatics (total)	5.3	48.1	41.1	1.4	--	—	—
PCBs (total)	95C	546C	23	12	2.8	—	28.8
Total Organic Concentration	143.6	883.5	108.9	127.6	—	—	59.3
Metals							
arsenic	76R	21R	33R	8R	--	—	16R
cadmium	31	36	42	42	31	2	11
lead	2,030	1,460	975	480	260	75	41
nickel	765	1,520R	1,290	665R	600	--	356R

* Results from 1980 IEPA investigation.

— Not detected.

J Estimated value - result is greater than zero, but less than the specified detection limit.

R Spike recover was outside control limits.

Source: Ecology and Environment, Inc. 1988.

Illinois Environmental Protection Agency · P.O. Box 19276, Springfield, IL 62794-9276

217/782-6760

February 6, 1989

L1630200005 - St. Clair County
Sauget Sites/Sauget
Superfund/General Correspondence

Raymond Avendt, Phd. P.E.,
President
The Avendt Group, Inc.
1906 Forest Drive
Annapolis, Maryland 21401

Dear Mr. Avendt:

As per your request of January 30, 1989 in a meeting in Springfield, I have attached a list of individuals which have been involved in the Sauget area.

Administrative Outline of IEPA - 2200 Churchill Road, Spfld, IL 62794-9276

Director of IEPA; Bernard P. Killian
Manager of Environmental Programs; Roger Kanerva
Manager of Land Pollution Control; William Child
Deputy Manager of Land Pollution Control; Bharat Mathur
Manager - Remedial Project Management Section; James F. Frank
Manager - Federal Sites Management Unit; Terry Ayers, P.E.
Federal Site Project Manager; Jeff Larson, L.A
Manager - State Remedial Project Management Unit; Monte Nienkerk
Manager- Field Operations (State); Glenn Savage
Manager - Field Operations Collinsville, IL.; Ken Mensing

Other IEPA Individuals Involved

IEPA Land Pollution Control - Preliminary Assessment/Site Inspection;
Tom Crause

IEPA Office of Chemical Safety - Jim O'Brien, Manager, Tom Hornshaw

IEPA Air Pollution Control; Mike Hayes, Manager
Terry Sweitzer, Permits
Jim Buckert, Jim Hoyt

IEPA Water Pollution Control; Jim Park, Manager
Thomas McSwiggin, Permits
Industrial, Tim Kluge
Industrial, Candy Morin

IEPA Enforcement Programs - (Legal)
Land, Chief Attorney; Gary King
Project Attorney; Bruce Carlson

IEPA Community Relations - Manager, Greg Michaud
Proj. C.R. Coordinator, Keri Luly

IEPA Public Information - Manager, Cinda Schien
Proj. P.I. Coordinator, Bob Casteel

State Attorney General's Office - 500 South 2nd Street
Springfield, Illinois 62706
Attorney General - Neil Hartigan
Deputy A.G. - Mike Hayes
Environmental Control Division Chief,
Christine Zeman
Chief Eng. - Howard Chinn, P.E.
Technical Lead - Nancy Mackiewicz
Attorney - Joseph Madonia, Esq.

Illinois State Water Survey (ISWS) Champaign, Il (217)333-4300

John Shafer, Phd.
Ken Rehfeldt, Hydrologist
Brian Kimpel

Illinois Department of Public Health - (IDPH) 525 W. Jefferson
Springfield, Illinois
Environmental Health - Tom Long
Environmental Health - Dave Webb, Edwardsville

USEPA Region V - 230 South Dearborn, Chicago, Illinois 60604

USEPA - Superfund Enforcement - Edward Addison (5HS-11)

USEPA - Water - Anne Weinert (WQP Tub 8)
Jerri-Anne Garl (5WG Tub 9)
Glenn Whitman - (5WG Tub 9)

USEPA - RCRA Gale Hruska (5HS-13)

Food & Drug Administration - Room 15 Federal Building
Springfield, IL
(217)492-4095

U.S. Fish & Wildlife (U.S. Dept. of Interior) Rock Island Field Office
1830 Second Avenue, 2nd Floor
Rock Island, IL 61201
Dick Ruelle, Contaminant Biologist

Kerr McGee Site in Sauget

Consultant - John Mathis & Associates
c/o Russ Perry - 210 West Sand Bank Road
P. O. Box 330
Columbia, IL 62236-0330
Phone: 618/281-7173
IEPA Project Manager - Bob O'Hara
217/782-3101

I will be in contact with the Illinois Department of Transportation Aerial Photos Office (E.Z. Ostenhuber) 217/782-7050 concerning the photos requested and the possibility of purchasing the negatives.

If you have any questions, please feel free to contact me. I'm sure we'll be in communication in the near future.

Sincerely,

Jeff Larson, Project Manager
Pre-Remedial Program Sub-Unit
Remedial Project Management Section
Division of Land Pollution Control

JF:mg 11/10

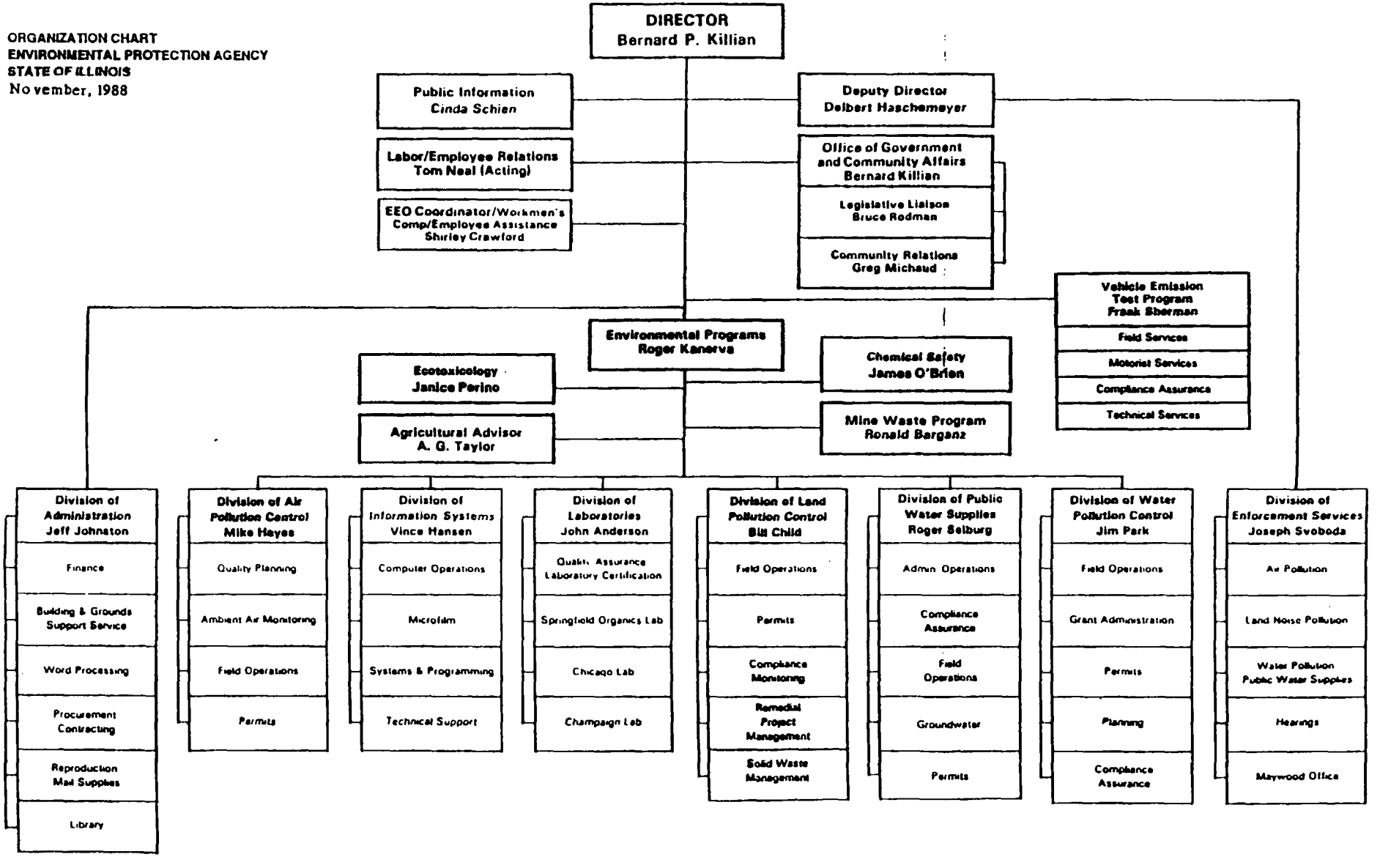
Attachments

. Groundwater Levels and Pumpage in the East St. Louis Area, IL. 1978-1980 - Collins & Richards
ISWS -1986

. Groundwater Levels and Pumpage in the East St. Louis Area, IL, 1981-1985. Kohlhase
ISWS - 1987

. Regional Groundwater Quality in the Metro East Area of Southwestern, IL - John Shafer
ISWS - August 1987

ORGANIZATION CHART
ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS
November, 1988



DIRECTORY — ILLINOIS ENVIRONMENTAL PROTECTION AGENCY — November, 1988

QUESTIONS CONCERNING:	SOURCE	ADDRESS	TELEPHONE
Environmental Emergencies (24-Hours)	Duty Officer	2200 Churchill Road, Springfield 62706	217/782-3637
DIRECTOR'S OFFICE			
Director	Bernard P. Killian	2200 Churchill Road, Springfield 62706	217/782-3397
Deputy Director	Delbert Haschemeyer	2200 Churchill Road, Springfield 62706	217/782-3397
Asst. to Director/Personnel Liaison	Jane Andrews	2200 Churchill Road, Springfield 62706	217/782-3397
EEO/Workmen's Comp./Employee Assistance	Shirley Crawford	2200 Churchill Road, Springfield 62706	217/782-3397
Labor/Employee Relations	Tom Neal (Acting)	2200 Churchill Road, Springfield 62706	217/782-9895
Transactions/Ins./Deferred Comp.	Norma Stahl	2200 Churchill Road, Springfield 62706	217/782-9895
Public Information	Cinda Schien	2200 Churchill Road, Springfield 62706	217/782-3397
Government and Community Affairs	Bernard Killian	2200 Churchill Road, Springfield 62706	217/782-3397
Community Relations	Greg Michaud	2200 Churchill Road, Springfield 62706	217/782-5562
Legislative Liaison	Bruce Rodman	2200 Churchill Road, Springfield 62706	217/782-3397
Intergovernmental Liaison	Ruth Dawson	2200 Churchill Road, Springfield 62706	217/782-5562
ENVIRONMENTAL PROGRAMS			
Manager	Roger Kaneva	2200 Churchill Road, Springfield 62706	217/785-5735
Asst. to Manager/Personnel Liaison	Joyce Barnett	2200 Churchill Road, Springfield 62706	217/785-5735
Chemical Safety	James O'Brien	2200 Churchill Road, Springfield 62706	217/785-0830
Ecotoxicology	Janice Perino	2200 Churchill Road, Springfield 62706	217/782-8700
Agricultural Advisor	A. G. Taylor	2200 Churchill Road, Springfield 62706	217/785-0830
Mine Waste Program	Ronald Bargantz	2200 Churchill Road, Springfield 62706	217/785-0748
CONTROL DIVISIONS			
AIR POLLUTION CONTROL			
Manager	Mike Hayes	1340 North 9th Street, Springfield 62702	217/782-7326
Deputy Division Manager	Dennis Lawler	1340 North 9th Street, Springfield 62702	217/782-7326
Personnel Liaison	Carol Janssen	1340 North 9th Street, Springfield 62702	217/782-7326
New Source Review Specialist	Chris Romaine	1340 North 9th Street, Springfield 62702	217/782-2113
Permits	Terry Sweltzer	1340 North 9th Street, Springfield 62702	217/782-2113
Grant, Budget Spec.	Willa Barger	1340 North 9th Street, Springfield 62702	217/782-7326
Air Quality Planning	Dennis Lawler	1340 North 9th Street, Springfield 62702	217/782-1830
Ambient Air Monitoring	Dave Kolaz	1340 North 9th Street, Springfield 62702	217/782-5811
Variances	Otto Klein	1340 North 9th Street, Springfield 62702	217/785-2011
Field Operations	Miles Zamco	1340 North 9th Street, Springfield 62702	217/785-2011
Maywood Region	Sy Levine	1701 First Avenue, Maywood 60153	312/345-9780
Peoria Region	Richard Jennings	5415 North University, Peoria 61614	309/693-5461
Collinsville Region	John Justice	2009 Mall St., Collinsville 62234	618/346-5120
LAND POLLUTION CONTROL			
Manager	Bill Child	2200 Churchill Road, Springfield 62706	217/782-6760
Deputy Division Manager	Bharat Mathur	2200 Churchill Road, Springfield 62706	217/782-6760
Hydrogeology	Sherri Otte	2200 Churchill Road, Springfield 62706	217/782-6760
Asst. to Manager/Personnel Liaison	Carol Alderson	2200 Churchill Road, Springfield 62706	217/782-6760
Program Development	Bill Radlinski	2200 Churchill Road, Springfield 62706	217/782-6760
Noise Technical Advisor	Greg Zak	2200 Churchill Road, Springfield 62706	217/782-6760
Compliance Monitoring	Harry Chappel	2200 Churchill Road, Springfield 62706	217/782-6761
Administrative Compliance	Gene Theios	2200 Churchill Road, Springfield 62706	217/782-6761
Technical Compliance	Angela Tin	2200 Churchill Road, Springfield 62706	217/782-6761
Permit Section	Larry Eastep	2200 Churchill Road, Springfield 62706	217/782-6762
RCRA	Charles Zeal	2200 Churchill Road, Springfield 62706	217/782-6762
Alternative Disposal		2200 Churchill Road, Springfield 62706	217/782-6762
Solid Waste/UIC	Ed Bakowski	2200 Churchill Road, Springfield 62706	217/782-6762
Field Operations	Glenn Savage	2200 Churchill Road, Springfield 62706	217/782-6761
Maywood Region	Citti Gould	1701 First Avenue, Maywood 60153	312/345-9780
Rockford Region	Robert Wengrow	4302 North Main Street, Rockford 61103	815/987-7404
Springfield Region	David Jansen	4500 South Sixth St., Springfield 62706	217/786-6892
Collinsville Region	Kenneth Mensing	2009 Mall St., Collinsville 62234	618/346-5120
Peoria Region	John Tripses	5415 North University, Peoria 61614	309/693-5463
Remedial Project Management	James Frank	2200 Churchill Road, Springfield 62706	217/782-6760
Federal Site Management	Terry Ayers	2200 Churchill Road, Springfield 62706	217/782-6760
State Site Management	Monte Nienkerk	2200 Churchill Road, Springfield 62706	217/782-6760
Immediate Removal	James Janssen	2200 Churchill Road, Springfield 62706	217/782-6760
Solid Waste Management	Michael Nechvatal	2200 Churchill Road, Springfield 62706	217/782-6761
PUBLIC WATER SUPPLIES			
Manager	Roger Selburg	1340 North 9th Street, Springfield 62702	217/785-8653
Admin. Operations	Richard Coffman	1340 North 9th Street, Springfield 62702	217/782-9470
Personnel Liaison	Linda Reid	1340 North 9th Street, Springfield 62702	217/785-5555
Compliance Assurance	Dorothy Bennett	1340 North 9th Street, Springfield 62702	217/785-0561
Operator Certification	Barbara Liebman	1340 North 9th Street, Springfield 62702	217/782-9470
Groundwater	Robert P. Clarke	1340 North 9th Street, Springfield 62702	217/782-9470
Hydrogeology Unit	Richard P. Cobb	1340 North 9th Street, Springfield 62702	217/782-9470
Field Operations	Charles R. Bell, Jr.	1340 North 9th Street, Springfield 62702	217/782-9470
Cross-Connection Program	Lou Allyn Byus	1340 North 9th Street, Springfield 62702	217/782-9470
Region I	Leonard Lindstrom(Acting)	4302 North Main Street, Rockford 61103	815/987-7760
Region II	Leonard Lindstrom	595 S. State, Elgin 60123	312/741-7771
Region III		5415 N. University, Peoria 61614	309/693-5460

QUESTIONS CONCERNING:	SOURCE	ADDRESS	TELEPHONE
Region IV	Cecil Van Ellen	2125 South First St., Champaign 61820	217/333-8361
Region V	Frank Lewis	4500 South Sixth St., Springfield 62706	217/786-6892
Region VI	Frank Lewis	2009 Mall St., Collinsville 62234	618/346-5120
Region VII	Dennis Slover	2309 West Main St., Marion 62959	618/997-4371
Permits	Donald E. Sutton	2200 Churchill Road, Springfield 62706	217/782-1724
VEHICLE EMISSION TEST PROGRAM			
Manager	Frank Sherman	1340 North 9th Street, Springfield 62702	217/785-7449
Asst. to Manager	Dale Hench	1340 North 9th Street, Springfield 62702	217/785-7449
Compliance Assurance	Jim O'Bryan	1340 North 9th Street, Springfield 62702	217/785-7449
Technical Services	James Matheny	1340 North 9th Street, Springfield 62702	217/785-7449
Field Services	Major Hearn	831 Busse Road, Elk Grove 60007	312/364-1069
Motorist Services	Charles Hasemann(Acting)	831 Busse Road, Elk Grove 60007	312/364-1069
Quality Assurance	Rick Peterson	831 Busse Road, Elk Grove 60007	312/364-1069
WATER POLLUTION CONTROL			
Manager	Jim Park	2200 Churchill Road, Springfield 62706	217/782-1654
Program Management	Jim Dawson	2200 Churchill Road, Springfield 62706	217/782-1654
Asst. to Manager/Personnel Liaison	Marilyn Schafer	2200 Churchill Road, Springfield 62706	217/782-1654
Compliance Assurance	Kenneth Rogers	2200 Churchill Road, Springfield 62706	217/782-9720
Compliance Monitoring	Roger Callaway	2200 Churchill Road, Springfield 62706	217/782-9720
Compliance Operations	Mike Garretson	2200 Churchill Road, Springfield 62706	217/782-9720
Field Operations	William H. Busch	2200 Churchill Road, Springfield 62706	217/782-1698
Rockford Region	Harris Chien	4302 North Main St., Rockford 61103	815/987-7755
Maywood Region	Theodore Denning	1701 First Avenue, Maywood 60153	312/345-9780
Peoria Region	James Kammueller	5415 North University, Peoria 61614	309/693-5463
Champaign Region	Kenneth Baumann	2125 South First St., Champaign 61820	217/333-8361
Springfield Region	Bud Bridgewater	4500 South Sixth St., Springfield 62706	217/786-6892
Collinsville Region	Robert Schleuger	2009 Mall St., Collinsville 62234	618/346-5120
Marion Region	Larry Zemba	2309 West Main St., Marion 62959	618/997-4371
Grant Administration	Ronald Drainer	2200 Churchill Road, Springfield 62706	217/782-2027
Construction	George Piersall	2200 Churchill Road, Springfield 62706	217/782-2027
Southern Project Management	Jim Lelnicke	2200 Churchill Road, Springfield 62706	217/782-2027
Northern Project Management	Al Garver	2200 Churchill Road, Springfield 62706	217/782-2027
Central Project Management	Ron Drainer	2200 Churchill Road, Springfield 62706	217/782-2027
Permits	Thomas McSwiggin	2200 Churchill Road, Springfield 62706	217/782-0610
Industrial	Tim Kluge	2200 Churchill Road, Springfield 62706	217/782-1698
Municipal	Rick Lucas	2200 Churchill Road, Springfield 62706	217/782-0610
Facility/Process	Charles Fellman	2200 Churchill Road, Springfield 62706	217/782-0610
Watershed	S. Al Keller	2200 Churchill Road, Springfield 62706	217/782-1698
Planning	Toby Frevert	2200 Churchill Road, Springfield 62706	217/782-3362
Program Development	Toby Frevert	2200 Churchill Road, Springfield 62706	217/782-3362
Monitoring	Toby Frevert	2200 Churchill Road, Springfield 62706	217/782-3362
SUPPORT DIVISIONS			
ADMINISTRATION			
Manager	Jeff Johnston	2200 Churchill Road, Springfield 62706	217/782-9894
Personnel Liaison	Jane Andrews	2200 Churchill Road, Springfield 62706	217/782-3397
Finance	Carlene Vellman	2200 Churchill Road, Springfield 62706	217/782-3250
Support Services		2200 Churchill Road, Springfield 62706	217/782-5082
Library Services	Nancy Simpson	2200 Churchill Road, Springfield 62706	217/782-9691
Office Services	Michael Sapetti	2200 Churchill Road, Springfield 62706	217/782-5082
Procurement/Contracting	Sheila Fee	2200 Churchill Road, Springfield 62706	217/782-5082
Reproductions/Mail/Supply	Claude Pearson	1340 North 9th Street Springfield 62702	217/782-6529
Word Processing Center	Norma Van Valkenburg	2200 Churchill Road, Springfield 62706	217/782-3062
INFORMATION SYSTEMS			
Manager	Vince Hansen	2200 Churchill Road, Springfield 62706	217/782-4291
Asst. to Manager/Personnel Liaison	Rebecca Sankus	2200 Churchill Road, Springfield 62706	217/782-4293
Computer Operations	Robert Miller	2200 Churchill Road, Springfield 62706	217/782-4292
Microfilm	Cathy Powell	2200 Churchill Road, Springfield 62706	217/782-4292
Systems and Programming	Patricia Patino	2200 Churchill Road, Springfield 62706	217/782-4292
Technical Support		2200 Churchill Road, Springfield 62706	217/782-4292
LABORATORIES			
Manager	John Anderson	2200 Churchill Road, Springfield 62706	217/782-9455
Asst. to Manager/Personnel Liaison	Bette Schafer	2200 Churchill Road, Springfield 62706	217/782-9455
Quality Assurance	Karl E. Reed	2200 Churchill Road, Springfield 62706	217/782-9455
Laboratory Certification	Janet Cruse	2200 Churchill Road, Springfield 62706	217/782-9455
Contract Laboratories	Ron Turpin	2200 Churchill Road, Springfield 62706	217/782-9455
Champaign Laboratory	Roy Frazier	2125 South First St., Champaign 61820	217/333-8907
Chicago Laboratory	James Daugherty	2121 West Taylor, Chicago 60612	312/793-4770
Springfield Laboratory	John Hurley	2200 Churchill Road, Springfield 62706	217/782-9780
ENFORCEMENT PROGRAMS			
Manager		2200 Churchill Road, Springfield 62706	217/782-5544
Air		2200 Churchill Road, Springfield 62706	217/782-5544
Land/Noise		2200 Churchill Road, Springfield 62706	217/782-5544
Public Water Supplies		2200 Churchill Road, Springfield 62706	217/782-5544
Water Pollution		2200 Churchill Road, Springfield 62706	217/782-5544
Hearings		2200 Churchill Road, Springfield 62706	217/782-5544

Illinois Environmental Protection Agency P.O. Box 19276, Springfield, IL 62794-9276

217/782-6761

Refer to: L1630200005-St. Clair County
Sauget Sites/Sauget
Superfund/General Correspondence

February 8, 1989

Raymond Avendt, Phd. P.E.
President
The Avendt Group, Inc.
1906 Forest Drive
Annapolis, MD 21401

Dear Mr. Avendt:

As per your request of January 30, 1989 in our meeting in Springfield, I have attached a model Scope of Work for Remedial Investigations & Feasibility Studies as well as a 18 month "Fast Track" Schedule pertaining to RI/FS activities.

Sincerely,

Jeff Larson, Project Manager
Federal Site Management Unit
Remedial Project Management Section
Division of Land Pollution Control

JL:pss

Attachments

cc: Terry Ayers

IV. Model Statement of Work for RI/FS

SECTION IV

Model Statement of Work (S.O.W.) for Conducting a Remedial Investigation and Feasibility Study (RI/FS)

The purpose of the Remedial Investigation is to determine the cause and extent of contamination at an uncontrolled hazardous waste site. The subsequent feasibility study, based on the RI report which includes an evaluation of risk, will determine a viable remedial action alternative.

WORK PLAN PREPARATION

The consultant should prepare a proposal work plan for the RI/FS, which addresses the elements contained in the following general statement of work for a work plan (from Draft Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA; OSWER directive 9355.3-01, March, 1988). Additionally, the Proposal Work Plan must include the elements of a site specific Quality Assurance Project Plan (QAPP), Sampling Plan (SP), Health and Safety Plan (HSP), and Data Collection Plan (DCP) for the investigation phase.

ELEMENTS OF RI/FS PROJECT PLANS('')

1. ELEMENTS OF A WORK PLAN

Introduction. Presents a general explanation of the reasons for the RI/FS and the expected results or goals of the RI/FS process.

Site Background and Physical Setting. Describes the current understanding of the physical setting of the site, the site history, and the existing information on the condition of the site.

Initial Evaluation. Presents the conceptual site model developed during scoping describing the potential migration and exposure pathways and the preliminary assessment of public health and environmental impacts.

Work Plan Rationale. Documents data requirements for both the risk assessment and the alternatives evaluation identified during the formulation of the DQOs and presents work plan approach to illustrate how the activities will satisfy data needs.

RI/FS Tasks. The tasks to be performed during the RI/FS are presented. This description incorporates RI site characterization tasks identified in the QAPP and FSP, the data evaluation methods identified during scoping, and the preliminary determination of tasks to be conducted after site characterization.

2. STANDARD RI/FS WORK PLAN TASKS

Task 1. Project Planning

This task includes efforts related to initiating a project after the work assignment is issued. Site survey work may be conducted during project planning or may occur during the field investigation task. It should not occur in both. The project planning task is defined as complete when the work plan and supplemental plans are approved (in whole or in part). The following typical elements are included in this task:

- Work plan memorandum
- Kickoff meeting
- Site visit/meeting
- Easements/permits
- Site reconnaissance and limited sampling
- Site survey/topographic map/review of existing aerial photos
- RI/FS brainstorming session
- Collection and evaluation of existing data
- Identification of preliminary remedial alterantives
- Preliminary risk assessment
- Screening of expedited response alternatives
- Determination of applicable, relevant or appropriate regulations
- RI scoping
- Preparation of plans (e.g., work plan, health and safety plan, QAPP, FSP)
- Task management and quality control

Task 2. Community Relations

This task incorporates all efforts related to the preparation and implementation of the community relations plan for the site. It includes time expended by both technical and community relations personnel. It will end when community relations work under Task 12 is completed. This task does not include work on the responsiveness summary (Task 12). The following are typical elements included in this task:

- Community interviews
- Community relations plan
- Fact sheets
- Public meeting support
- Technical support for community relations
- Community relations implementation
- Task management and quality control

Task 3. Field Investigation

This task involves efforts related to fieldwork in implementing the RI. It includes the procurement of subcontractors related to field efforts. The task begins when any element authorizing fieldwork, as outlined in the work plan, is approved (in whole or in part). Field investigation is defined as complete when the contractor and subcontractors are demobilized from the field. The following activities are typically included in this task:

- Mobilization
- Media sampling
- Source testing
- Geology/hydrogeological investigations
- Geophysics
- Site survey/topographic mapping (if not performed in project planning task)
- Field screening/analyses
- Procurement of subcontractors
- RI waste disposal
- Task management and quality control

Task 4. Sample Analysis/Validation

This task includes efforts relating to samples after they leave the field. Separate monitoring of close support laboratories may be required. Any efforts associated with laboratory procurement are also included in this task. The task ends on the date that data validation is complete. The following typical activities are usually included in this task:

- Sample management
- Non-CLP analyses
- Use of mobile laboratories
- Data validation
- Testing of physical parameters
- Task management and quality control

Task 5. Data Evaluation

This task includes efforts related to the analysis of data once it has been verified that the data are of acceptable accuracy and precision. The task begins on the date that the first set of validated data is received by the contractor's project team and ends during preparation of the RI report when it is deemed that no additional data are required. The following are typical activities:

- Data evaluation
- Data reduction and tabulation
- Environmental fate and transport modeling/evaluation
- Task management and quality control

Task 6. Assessment of Risks

This task includes efforts related to conducting assessments of risks to human health and the environment. The task will include work under the RI to assess the baseline risks and set preliminary performance goals under the FS, to compare risks evaluated among alternatives. Work will begin during the data evaluation and end during the remedial alternatives evaluation tasks. The following are typical activities:

- Environmental assessment
- Endangerment assessment
- Modeling specific to exposure assessment
- Task management and quality control

Task 7. Treatability Study/Pilot Testing

This task includes efforts to prepare and conduct pilot, bench, and treatability studies, associated task management, and quality control. The following are typical activities:

- Work plan preparation
- Test facility and equipment procurement
- Vendor and analytical service procurement
- Equipment operation and testing
- Sample analysis and validation
- Report preparation
- Task management and quality control

Task 8. Remedial Investigation Reports

This task covers all efforts related to the preparation of the findings once the data have been evaluated under Tasks 5 and 6. The task covers all draft and final RI reports as well as task management and quality control. The task ends when the last RI document is submitted by the contractor to IEPA. The following are typical activites:

- Formatting tables/data presentation
- Writing the report
- Preparing graphics associated with the report
- Reviewing and providing QC efforts
- Printing and distributing the report
- Holding review meetings
- Revising report based on agency comments
- Providing task management

Task 9. Remedial Alternatives Screening

This task includes efforts to select the alternatives to undergo full evaluation. The task starts during data evaluation when sufficient data are available to begin the screening process. For reporting purposes, the task is defined as complete when a final set of alternatives is chosen for detailed evaluation. The following are typical activities:

- Listing potential technologies
- Screening technologies
- Assembling potential alternatives
- Evaluating each alternative based on screening criteria
- Reviewing and providing QC of work effort
- Preparing report or technical memorandum

. Refining list of alternatives to be evaluated

Task 10. Remedial Alternatives Evaluation

This task applies to the detailed analysis and comparison of alternatives. The evaluation activities include performing detailed public health, environmental, and institutional analyses. The task ends with the start of the preparation of the FS report. The following are typical activities:

. Technical evaluation of each alternative
. Public health evaluation of each alternative
. Environmental evaluation of each alternative
. Institutional evaluation of each alternative
. Cost evaluation of each alternative
. Comparison of alternatives
. Review of QC efforts
. Review meetings
. Task management and quality control

Task 11. Feasibility Study/RI/FS Reports

Similar to the RI reports task, this task is used to report FS deliverables. However, this task should be used in lieu of the RI reports task to report costs and schedules for combined RI/FS deliverables. The task ends when the FS (or RI/FS) is released to the public. The following are typical activities:

. Formatting tables/data presentation
. Preparing graphics associated with the report
. Writing the report
. Printing and distributing the report
. Holding review meetings
. Revising the report on the basis of agency comments
. Providing task management and quality control

Task 12. Post RI/FS Support

This task includes efforts to prepare the responsiveness summary, support the ROD, conduct any predesign activities, and close out the work assignment. All activities occurring after the release of the FS to the public should be reported under this task. The following are typical activities:

. Preparing the predesign report
. Preparing the conceptual design
. Attending public meetings
. Writing and reviewing the responsiveness summary
. Supporting ROD preparation and briefings
. Reviewing and providing QC of the work effort
. Providing task management and quality control

Task 13. Enforcement Support

This task includes efforts during the RI/FS associated with enforcement aspects of the project. Activities vary but are to be associated with efforts related to potentially responsible parties. The following are typical activities:

- Reviewing PRP documents
- Attending negotiation meetings
- Preparing briefing materials
- Assisting in the preparation of EDD
- Providing task management and quality control

Task 14. Miscellaneous Support

This task is used to report on work that is associated with the project but is outside the normal RI/FS scope of work. Activities will vary but include the following:

- Specific support for review of ATSDR or IDPH activities
- Special efforts related to public health assessments
- Support for review of special federal, state or local projects

Task 15. ERA Planning

This task is to be used specifically for planning expedited response actions (ERAs) after the appropriate remedial action is selected. Activities will fall into the two major categories of administrative support and technical support. The following are typical activities:

- Drafting and supporting preparation of action memorandums
- Preparing briefing materials
- Attending meetings
- Preparing ERA plans and specification
- Preparing procurement activities
- Reviewing proposals

Note: The following are some specific comments applicable to the 15 tasks described above:

- All standard tasks or all work activities under each task need not be used for every RI/FS. Only those that are relevant to a given project should be used.

- Tasks include both draft and final versions of deliverables unless otherwise noted.

- The phases of a task should be reported in the same task (e.g., field investigation Phase I and Phase II will appear as one field investigation task).

- If an RI/FS is divided into distinct operable units (OUs), each OU should be monitored and reported on separately. Therefore, an RI/FS with several OUs may, in fact, have more than 15 tasks, although each of the tasks will be one of the 15 standard tasks.

- Costs associated with project management and technical quality assurance are included in each task.

- Costs associated with procuring subcontractors are included in the task in which the subcontractor will perform work (not the project planning task).

- This list of standard tasks defines the minimum level of reporting. For Federal-lead and/or State tasks, some RPMs currently report progress in a more detailed fashion and may continue to do so as long as activities are associated with standard tasks.

3. ELEMENTS OF A QUALITY ASSURANCE PROJECT PLAN

Title Page. At the bottom of the title page, provisions should be made for the signatures of approving personnel. As a minimum, the QAPP must be approved by the following:

- Subcontractor's project manager (if a subcontractor is used)
- Subcontractor's QA manager (if a subcontractor is used)
- Contractor's project manager (if applicable)
- Contractor's QA manager (if applicable)
- Lead agency's project office
- Lead agency's QA officer (if applicable)

Provision should be made for the approval or review of others (e.g., regional laboratory directors), if applicable.

Table of Contents. The Table of contents will include an introduction, a serial listing of the 16 QAPP elements, and a listing of any appendixes that are required to augment the QAPP. The end of the table of contents should include a list of the recipients of official copies of the QAPP.

Project Description. The introduction to the project description consists of a general paragraph identifying the phase of the work and the general objectives of the investigation. A description of the location, size, and important physical features of the site such as ponds, lagoons, streams, and roads should be included (a figure showing the site location and layout would be helpful). A chronological site history including descriptions of the use of the site, complaints by neighbors, permitting, and use of chemicals needs to be provided along with a brief summary of previous sampling efforts and an overview of the results. Finally, specific project objectives for this phase of data gathering need to be listed, and ways in which the data will be used to address each of the objectives must be identified. However, those items above that are also included in the work plan need not be repeated in the QAPP and, instead, may be incorporated by reference.

Project Organization and Responsibilities. This element identifies key personnel or organizations that are necessary for each activity during the study. A table or chart showing the organization and line authority should be included. When specific personnel cannot be identified, the organization with the responsibility should be listed.

QA Objectives for Measurement. For individual matrix groups and parameters, a cooperative effort should be undertaken by the lead agency, the principal engineering firm, and the laboratory staff to define what levels of quality should be required for the data. These QA objectives will be based on a common understanding of the intended use of the data, available laboratory procedures, and available resources. The field blanks and duplicate field sample aliquots to be collected for QA purposes should be itemized for the matrix groups identified in the project description.

The selection of analytical methods requires a familiarity with regulatory or legal requirements concerning the data usage. Any regulations that mandate the use of certain methods for any of the sample matrices and parameters listed in the project description should be specified.

The detection limits needed for the project should be reviewed against the detection limits of the laboratory used. Special attention should be paid to the detection limits provided by the laboratory for volatile organic compounds, because these limits are sometimes insufficient for the analysis of drinking water. Detection limits may also be insufficient to assess attainment of ARARs. For projects using the CLP system, if QA objectives are not met by CLP Routine Analytical Services (RAS), then one or more CLP Special Analytical Services (SAS) can be written.

Quantitative limits should be established for the following QA objectives:

1. Level of QA effort
2. Accuracy of spikes, reference compounds, and so forth
3. Precision
4. Method detection limits

These limits may be specified by referencing the statement of work (SOW) for CLP analysis, including SAS requests, in an appendix and referring to the appendix or owner/operator manuals for field equipment.

Completeness, representativeness, and comparability are quality characteristics that should be considered during study planning. Laboratories should provide data that meet QC acceptance criteria for 90 percent or more of the requested determinations. Any sample types, such as control or background locations, that require a higher degree of completeness should be identified. "Representativeness" of the data is most often thought of in terms of collection of representative samples or selection of representative sample aliquots during laboratory analysis. "Comparability" is a consideration during planning to avoid having to use data gathered by different

organizations or among different analytical methods that cannot be reasonably compared because of differences in sampling conditions, sampling procedures, etc.

Sampling Procedures. These procedures append the site-specific sampling plan. Either the sampling plan or the analytical procedures element may document field measurements or test procedures for hydrogeological investigations.

For each major measurement, including pollutant measurement systems, a description of the sampling procedures to be used should be provided. Where applicable, the following should be included:

- A description of techniques or guidelines used to select sampling sites
- A description of the specific sampling procedures to be used
- Charts, flow diagrams, or tables delineating sampling program operations
- A description of containers, procedures, reagents, and so forth, used for sample collection, preservation, transport, and storage
- A discussion of special conditions for the preparation of sampling equipment and containers to avoid sample contamination
- A description of sample preservation methods
- A discussion of the time considerations for shipping samples promptly to the laboratory
- Examples of the custody or chain-of-custody procedures and forms
- A description of the forms, notebooks, and procedures to be used to record sample history, sampling conditions, and analyses to be performed.

The DQO document described above can also be incorporated by reference in this section. In addition, the Compendium of Superfund Field Operations Methods (EPA/SAO/P-87/001a, OSWER Directive 9355.0-14) contains information pertinent to this section and can be incorporated by reference.

Sample Custody. Sample custody is a part of any good laboratory or field operation. If samples may be needed for legal purposes, chain-of-custody procedures, as defined by the NEIC Policies and Procedures (EPA-330/9-78-001-R, revised June 1985), will be used. Custody is divided into three parts:

- Sample collection
- Laboratory
- Final evidence files

The QAPP should address all three areas of custody and should refer to the CLP User's Guide and Regional guidance documents for examples and instructions. For projects using the CLP system, laboratory custody is described in the CLP SOW; this may be referenced. Final evidence files include all originals of laboratory reports and are maintained under documented control in a secure area.

- It is in your possession
- It is in your view, after being in your possession
- It was in your possession and you placed it in a secure area
- It is in a designated secure area

A QAPP should provide examples of chain-of-custody records or forms used to record the chain of custody for samples, laboratories, and evidence files.

Calibration Procedures. These procedures should be identified for each parameter measured and should include field and laboratory testing. The appropriate standard operating procedures (SOP) should be referenced, or a written description of the calibration procedures to be used should be provided.

Analytical Procedures. For each measurement, either the applicable SOP should be referenced or a written description of the analytical procedures to be used should be provided. Approved EPA/IEPA procedures or their equivalent should be used.

Data Reduction, Validation, and Reporting. For each measurement, the data reduction scheme planned for collected data, including all equations used to calculate the concentration or value of the measured parameter, should be described. The principal criteria that will be used to validate the integrity of the data during collection and reporting should be referenced from Functional Guidelines for Evaluating Organics Analyses (EPA 68-01-6699) and Functional Guidelines for Evaluating Inorganics Analyses (Ref.).

Internal Quality Control. All specific internal quality control methods to be used should be identified. These methods include the use of replicates, spike samples, split samples, blanks, standards, and QC samples. Ways in which the quality control information will be used to qualify the field data should be identified.

Performance and Systems Audits. The QAPP should describe the internal and external performance and systems audits that will be required to monitor the capability and performance of the total measurement system. The current CLP Invitation for Bids for organic and inorganic analyses may be referenced for CLP RAS performance and systems audits. The Compendium of Superfund Field Operations Methods may be referenced for routine fieldwork.

The systems audits consist of the evaluation of the components of the measurement systems to determine their proper selection and use. These audits include a careful evaluation of both field and laboratory quality control procedures and are normally performed before or shortly after systems are operational. However, such audits should be performed on a regular schedule during the lifetime of the project or continuing operation. An on-site systems audit may be required for formal laboratory certification programs.

After systems are operational and are generating data, performance audits are conducted periodically to determine the accuracy of the total measurement system or its component parts. The QAPP should include a schedule for conducting performance audits for each measurement parameter. Laboratories may be required to participate in the analysis of performance evaluation samples related to specific projects. Project plans should also indicate, where applicable, scheduled participation in all other laboratory performance evaluation studies.

In support of performance audits, the environmental monitoring systems and support laboratories provide necessary audit materials and devices, as well as technical assistance. These laboratories conduct regular interlaboratory performance tests and provide guidance and assistance in the conduct of systems audits. The laboratories should be contacted if assistance is needed in the above areas.

Preventative Maintenance. A schedule should be provided of the major preventative maintenance tasks that will be carried out to minimized downtime of field and laboratory instruments. Owner's manuals may be referenced for field equipment.

Specific Routine Procedures Used to Assess Data (Precision, Accuracy, and Completeness). The precision and accuracy of data must be routinely assessed for all environmental monitoring and measurement data. The QAPP should describe specific procedures to accomplish this assessment. If enough data are generated, statistical procedures may be used to assess the precision, accuracy, and completeness. If statistical procedures are used, they should be documented.

Corrective Actions. In the context of quality assurance, corrective actions are procedures that might be implemented with respect to samples that do not meet QA specifications. Corrective actions are usually addressed on a case-by-case basis for each project. The need for corrective actions is based on predetermined limits for acceptability. Corrective actions may include resampling or reanalysis of samples and recommending an audit of laboratory procedures. The QAPP should identify persons responsible for initiating these actions, procedures for identifying and documenting corrective actions, and reporting and followup procedures.

Quality Assurance Reports. QAPPs should identify the method to be used to report the performance of measurement systems and data quality. These reports include results of performance audits, results of systems audits, and significant QA problems encountered, along with recommended solutions. The final report for each project must include a separate QA section that summarizes the data quality information contained in the periodic reports.

4. ELEMENTS OF A FIELD SAMPLING PLAN

Site Background. If the analysis of existing data is not included in the work plan or QAPP, it must be included in the FSP. This analysis would include a description of the site and surrounding areas and a discussion of known and suspected contaminant sources, probable transport pathways, and other information about the site. The analysis should also include descriptions of specific data gaps and ways in which sampling is designed to fill those gaps.

Sampling Objectives. Specific objectives of a sampling effort that describe the intended uses of data should be clearly and succinctly stated.

Sample Location and Frequency. This section of the sampling plan identifies each sample matrix to be collected and the constituents to be analyzed. A table may be used to clearly identify the number of samples to be collected along with the appropriate number of replicates and blanks. A figure should be included to show the locations of existing or proposed sample points.

Sample Designation. A sample numbering system should be estabished for each project. The sample designation should include the sample or well number, the sampling round, the sample matrix (e.g., surface soil, groundwater, soil boring), and the name of the site.

Sampling Equipment and Procedures. Sampling procedures must be clearly written. Step-by-step instructions for each type of sampling are necessary to enable the field team to gather data that will meet the DQOs. A list should include the equipment to be used and the material composition (e.g., Teflon, stainless steel) of the equipment.

Sample Handling and Analysis. A table should be included that identifies sample preservation methods, types of sampling jars, shipping requirments, and holding times. SAS requests and CLP SOWs may be referenced for some of this information if the CLP system is used.

Examples of paperwork and instructions for filling out the paperwork should be included. Use of the CLP requires that traffic reports, chain-of-custody forms, SAS packing lists, and sample tags be filled out for each sample. If other laboratories are to be used, the specific documentation required should be identified.

Provision should be made for the proper handling and disposal of wastes generated on-site. The site-specific procedures need to be described to prevent contamination of clean areas and to comply with existing regulations.

5. ELEMENTS OF A HEALTH AND SAFETY PLAN

1. The name of a site health and safety officer and the names of key personnel and alternates responsible for site safety and health should be given.

2. A safety and health risk analysis for existing site conditions, and for each site task and operation should be developed.

3. Employee training assignments should be specified.

4. A description of personal protective equipment to be used by employees for each of the site tasks and operations being conducted should be detailed.

5. Medical surveillance requirements should be specified.

6. A description of the frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used should be specified.

7. Site control measures should be fully outlined.

8. Decontamination procedures for personnel and equipment should be specified.

9. Standard operating procedures for the site should be established.

10. A contingency plan that meets the requirements of 29 CFR 1910.120(l)(l) and (l)(2) should be established.

11. Entry procedures for confined spaces should be fully outlined (if applicable).

(1)(Reprinted from Appendix B of the Draft Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA; March 1988; OSWER Directive 9355.3-01)

United States
Environmental Protection
Agency

Office of Emergency and
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Washington, DC 20460

BACKGROUND INFORMATION
PROPOSED REVISIONS TO HAZARD RANKING SYSTEM

The U.S. Environmental Protection Agency (EPA) is proposing revisions to the Hazard Ranking System (HRS) in response to the Superfund Amendments and Reauthorization Act of 1986 (SARA).

The HRS is the scoring system EPA uses to assess the relative threat associated with the release or potential release of hazardous substances from a waste site. The HRS score is the primary criterion EPA uses to determine whether a site should be placed on the National Priorities List (NPL). The NPL identifies sites that warrant further investigation to determine if they pose risks to public health or the environment. Sites on the NPL are eligible for long-term "remedial action" financed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by SARA. SARA authorizes a "Hazardous Substances Superfund" totaling $8.5 billion over 5 years to pay costs not assumed by those responsible for problems at a site. The HRS uses data that can be collected relatively quickly and inexpensively, thus allowing most Superfund resources to be directed to remedial actions at sites on the NPL.

SARA requires EPA to revise the HRS to assure that, to the maximum extent feasible, it accurately assesses relative risk. Specifically, EPA is to:

- o Assess how surface water contamination affects the human food chain and recreational use of surface water.
- o Consider potential contamination of ambient air as well as actual contamination.
- o Give a high priority to sites which have contaminated principal drinking water supplies.
- o Consider the toxicity, quantity, and concentrations of hazardous constituents in fly ash wastes.

The current HRS, adopted in 1982, evaluates the relative threat of a site over five pathways. The HRS score is based on the evaluation of three migration pathways—ground water, surface water, and air. The two other pathways, direct contact and fire/explosion, are evaluated to determine the need for immediate removal (emergency) action. HRS scores range from 0 to 100. Sites scoring 28.50 and above on the current HRS are eligible for the NPL.

The proposed revisions (Figure 1-4) retain the same basic approach as the current HRS, while incorporating SARA requirements as well as improvements identified as necessary by EPA. The revisions propose to retain the ground water, surface water, and air pathways, drop the direct contact and fire/explosion pathways, and add a fourth pathway, onsite exposure, which is similar to direct contact.

Proposal of the HRS revisions is followed by a 60-day public comment period. EPA will review and respond to all comments, and change the proposed revisions where appropriate. The revised HRS is expected to be published in the Federal Register in early 1990.

Until that time, the current HRS is in effect. EPA will continue to evaluate potential sites with the current HRS and place them on the NPL if they meet the listing requirements. SARA does not require that sites now on the NPL be re-evaluated with the new HRS. Sites already proposed on the basis of the current HRS can be placed on the final NPL without re-evaluation until the revised HRS takes effect. Based on the current HRS, 797 sites are on the final